

DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2007
BUDGET ESTIMATES SUBMISSION



JUSTIFICATION OF ESTIMATES
FEBRUARY 2006

RESEARCH, DEVELOPMENT, TEST &
EVALUATION, NAVY
BUDGET ACTIVITY 4

UNCLASSIFIED
 DEPARTMENT OF THE NAVY
 FY 2007 RDT&E PROGRAM

SUMMARY
 (\$ IN THOUSANDS)

FEBRUARY 2006

Summary Recap of Budget Activities -----	FY 2005 -----	FY 2006 -----	FY 2007 -----
Advanced Component Development & Prototypes	3,091,286	3,487,525	2,919,305
Total Research, Development, Test & Eval, Navy	3,091,286	3,487,525	2,919,305
Summary Recap of FYDP Programs -----			
Research and Development	3,091,286	3,487,525	2,919,305
Total Research, Development, Test & Eval, Navy	3,091,286	3,487,525	2,919,305

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DEPARTMENT OF THE NAVY
FY 2007 RDT&E PROGRAM

EXHIBIT R-1

APPROPRIATION: 1319N Research, Development, Test & Eval, Navy

Date: FEBRUARY 2006

Line No --	Program Element Number -----	Item -----	Act ---	Thousands of Dollars			S E C -
				FY 2005 -----	FY 2006 -----	FY 2007 -----	
30	0603207N	Air/Ocean Tactical Applications	04	24,561	31,187	31,778	U
31	0603216N	Aviation Survivability	04	38,312	44,261	6,177	U
32	0603237N	Deployable Joint Command and Control	04	41,940	40,841	16,383	U
33	0603254N	ASW Systems Development	04	17,357	18,944	16,782	U
34	0603261N	Tactical Airborne Reconnaissance	04	6,383	3,879	3,959	U
35	0603382N	Advanced Combat Systems Technology	04	61,474	33,605	12,398	U
36	0603502N	Surface and Shallow Water Mine Countermeasures	04	97,892	118,682	130,265	U
37	0603506N	Surface Ship Torpedo Defense	04	54,624	53,133	40,627	U
38	0603512N	Carrier Systems Development	04	161,539	168,283	153,894	U
39	0603513N	Shipboard System Component Development	04	44,282	50,918	14,135	U
40	0603525N	PILOT FISH	04	85,209	138,834	134,550	U
41	0603527N	RETRACT LARCH	04	89,812	81,475	87,180	U
42	0603536N	RETRACT JUNIPER	04	36,337	54,030	38,462	U
43	0603542N	Radiological Control	04	935	1,818	1,901	U
44	0603553N	Surface ASW	04	19,552	23,433	38,696	U
45	0603559N	SSGN Conversion	04	19,505	23,660	25,953	U
46	0603561N	Advanced Submarine System Development	04	89,790	159,531	140,432	U
47	0603562N	Submarine Tactical Warfare Systems	04	5,891	7,017	10,357	U
48	0603563N	Ship Concept Advanced Design	04	16,077	21,221	21,549	U
49	0603564N	Ship Preliminary Design & Feasibility Studies	04		26,615	21,314	U
50	0603570N	Advanced Nuclear Power Systems	04	167,951	165,845	174,648	U

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DEPARTMENT OF THE NAVY
FY 2007 RDT&E PROGRAM

EXHIBIT R-1

APPROPRIATION: 1319N Research, Development, Test & Eval, Navy

Date: FEBRUARY 2006

Line No --	Program Element Number -----	Item -----	Act ---	Thousands of Dollars			S E C -
				FY 2005 -----	FY 2006 -----	FY 2007 -----	
51	0603573N	Advanced Surface Machinery Systems	04	3,306	5,100		U
52	0603576N	CHALK EAGLE	04	46,426	114,328	139,017	U
53	0603581N	Littoral Combat Ship (LCS)	04	450,783	573,957	319,671	U
54	0603582N	Combat System Integration	04	100,974	92,310	62,095	U
55	0603609N	Conventional Munitions	04	32,258	36,385	22,385	U
56	0603611M	Marine Corps Assault Vehicles	04	239,152	249,727	188,306	U
57	0603612M	USMC Mine Countermeasures Systems - Adv Dev	04	5,827	3,216	3,777	U
58	0603635M	Marine Corps Ground Combat/ Support System	04	28,624	13,293	503	U
59	0603654N	Joint Service Explosive Ordnance Development	04	25,511	33,898	24,467	U
60	0603658N	Cooperative Engagement	04	99,618	99,557	53,406	U
61	0603713N	Ocean Engineering Technology Development	04	25,442	24,462	16,324	U
62	0603721N	Environmental Protection	04	27,847	27,547	20,271	U
63	0603724N	Navy Energy Program	04	7,510	8,521	1,600	U
64	0603725N	Facilities Improvement	04	1,955	6,396	4,194	U
65	0603734N	CHALK CORAL	04	57,504	51,977	28,578	U
66	0603739N	Navy Logistic Productivity	04	19,727	20,575	6,306	U
67	0603746N	RETRACT MAPLE	04	265,507	303,982	344,912	U
68	0603748N	LINK PLUMERIA	04	112,694	80,497	80,662	U
69	0603751N	RETRACT ELM	04	47,020	56,180	64,133	U
70	0603755N	Ship Self Defense	04	13,240	9,447	8,897	U
71	0603764N	LINK EVERGREEN	04	42,725	57,070	55,051	U

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DEPARTMENT OF THE NAVY
FY 2007 RDT&E PROGRAM

EXHIBIT R-1

APPROPRIATION: 1319N Research, Development, Test & Eval, Navy

Date: FEBRUARY 2006

Line No --	Program Element Number -----	Item -----	Act ---	Thousands of Dollars			S E C -
				FY 2005 -----	FY 2006 -----	FY 2007 -----	
72	0603787N	Special Processes	04	41,810	47,125	47,180	U
73	0603790N	NATO Research and Development	04	10,017	10,174	9,784	U
74	0603795N	Land Attack Technology	04	98,435	73,983	18,571	U
75	0603851M	Nonlethal Weapons	04	42,536	46,902	44,815	U
76	0603857N	All Service Combat Identification Evaluation Team (ASCIET)	04	13,289	15,451		U
77	0603860N	Joint Precision Approach and Landing Systems	04	32,652	38,670	41,242	U
78	0603879N	Single Integrated Air Picture (SIAP) System Engineer (SE)	04	19,617	36,170	50,282	U
79	0603889N	Counterdrug RDT&E Projects	04	21,950	8,150		U
80	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	21,341	9,807	20,527	U
81	0604327N	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	9,645	7,200	77,000	U
82	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	25,204	35,224	43,909	U
83	0604787N	Joint Warfare Transformation Programs	04	21,717	23,032		U
		Advanced Component Development & Prototypes		----- 3,091,286	----- 3,487,525	----- 2,919,305	
		Total Research, Development, Test & Eval, Navy		----- 3,091,286	----- 3,487,525	----- 2,919,305	

**Fiscal Year 2007 Budget Estimates
Budget Appendix Extract Language**

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, NAVY

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, \$16,912,223,000, to remain available for obligation until September 30, 2008: *Provided*, That funds appropriated in this paragraph which are available for the V-22 may be used to meet unique operational requirements of the Special Operations Forces: *Provided further*, That funds appropriated in this paragraph shall be available for the Cobra Judy program. (10 U.S.C. 174, 2352-54, 7522; Department of Defense Appropriations Act, 2006).



PROGRAM

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PROGRAM ASSESSMENT

Defense Communications Infrastructure

The purpose of this program is to provide Information Technology networks and systems for the transmission of voice, data, and video information to locations around the world for the Department of Defense for both military and business functions.

NOT PERFORMING

Results Not Demonstrated

- **The program failed to demonstrate results because there are no enterprise or department level standards to measure program performance, such as availability, reliability, security, and capacity.**
- **Some elements of the program, such as the Defense Information Systems Network, have performance measures for availability, reliability, security and capacity, and generally meet those targets.**

We are taking the following actions to improve the performance of the program:

- Developing common measurements to assess performance across the department to ensure that military and business users have a network that is universally available, secure and robust.
- Create procedures to audit performance reporting to ensure dependability.

- [Details and Current Status of this program assessment.](#)
- [How all Federal programs are assessed.](#)
- [Learn more about Defense Communications Infrastructure.](#)

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /				R-1 ITEM NOMENCLATURE PE 0603207N Air/Ocean Tactical Applications				
				BA-4				
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	24.561	31.187	31.778	30.895	31.868	31.122	32.009	
2341 METOC Data Acquisition	8.167	9.047	10.703	10.566	10.770	10.707	11.045	
2342 METOC Data Assimilation and Modeling	7.583	9.454	10.794	10.932	11.731	10.969	11.292	
2343 Tactical METOC Applications	6.598	6.902	8.685	8.187	8.105	8.134	8.360	
2344 Precise Timing and Astrometry	1.247	1.284	1.596	1.210	1.262	1.312	1.312	
9999 Congressional Increases	0.966	4.500						

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

The Air Ocean Tactical Applications (AOTA) Program Element is fully aligned with Navy's Sea Power 21 concept to enhance the future mission capabilities of the Navy-Marine Corps Team. New state-of-the art Government and commercial technologies are identified, transitioned, demonstrated and then integrated into Combat Systems and FORCENet-related programs of record and Tactical Decision Aids (TDAs) that determine in real-time and near-real-time the operational effects of the physical environment on the performance of combat forces and their new and emerging platforms, sensors, systems and munitions. The AOTA program element focuses on sensing and characterizing the littoral and deep-strike battlespace in the context of regional conflicts and crisis response scenarios. Projects in this program element transition state-of-the art sensing, assimilation, modeling and decision aid technologies from Government and commercial sources. Unique project development efforts include atmospheric and oceanographic data assimilation techniques, forecast models, data base management systems and associated software for use in mainframe, desktop and laptop computers. Global Geospatial Information and Services efforts within this program address the bathymetric and gravimetric needs of the Navy. Also developed are algorithms to process new satellite sensor data for integration into Navy and Marine Corps decision support systems and for display as part of the common operational and tactical pictures. In addition, the projects provide for demonstration and validation of specialized atmospheric and oceanographic instrumentation and measurement techniques, new sensors, communications and interfaces. Included are new capabilities to assess, predict and enhance the performance of current and emerging undersea warfare and mine warfare weapons systems. AOTA capabilities are designed to support the latest versions of the Global Command and Control System (GCCS), the new Joint Command and Control (JC2) system, and specific unit-level combat systems. This program also develops representations of the physical environment for incorporation into Navy and Marine Corps warfare trainers and simulations. Finally, this program develops technological upgrades for the U.S. Naval Observatory's Master Clock system to keep pace with the demands of modern military communications, cryptographic, intelligence, geolocation, and targeting systems; develops near-real-time earth orientation predictions; develops very precise determination of positions of both faint and bright stars; and supports satellite tracking and space debris studies. Funding increases in Projects 2341 and 2342 in FY06 reflect the development of a new networked sensor grid and accelerated data fusion/assimilation efforts in support of the Littoral Battlespace Sensing (LBS) program. These efforts will enhance Intelligence Preparation of the Environment (IPE) capabilities to meet Chief of Naval Operations (CNO) and Commander Fleet Forces Command (CFFC) requirements for remote autonomous, clandestine, littoral battlespace sensing in support of Sea Shield & Sea Basing.

Beginning in FY 2007, funding supports Sensors and Observing Systems (in-situ, unmanned, space, through the sensor); Assimilation and Prediction Models (Atmosphere, Ocean, Space); Database and Product Development (Atmosphere, Ocean, Acoustics, Geospatial Information and Services (GI&S)); Tactical Decision Aids (TDA) and Mission Planning; Precise Timing, Astrometry and Reference Frames; and METOC in the Information Technology (IT) Enterprise Environment.

FY05 includes Congressional Add for Marine Mammal Tracking and Mitigation. FY06 includes Congressional Adds for 3D-CMAPS, Gateway System and Littoral Acoustic Demonstration Center.

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006																																																																				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4		R-1 ITEM NOMENCLATURE PE 0603207N Air/Ocean Tactical Applications																																																																				
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 60%;">(U) Funding:</th> <th style="text-align: right; width: 15%;">FY 2005</th> <th style="text-align: right; width: 15%;">FY 2006</th> <th style="text-align: right; width: 10%;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>FY06 President's Budget</td> <td style="text-align: right;">25.186</td> <td style="text-align: right;">27.094</td> <td style="text-align: right;">32.145</td> </tr> <tr> <td>FY07 President's Budget</td> <td style="text-align: right;">24.561</td> <td style="text-align: right;">31.187</td> <td style="text-align: right;">31.778</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">(0.625)</td> <td style="text-align: right; border-top: 1px solid black;">4.093</td> <td style="text-align: right; border-top: 1px solid black;">(0.367)</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 20px;">Small Business Innovation Research (SBIR)</td> <td style="text-align: right;">(0.300)</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Department of Energy Transfer</td> <td style="text-align: right;">(0.019)</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Program Realignments</td> <td style="text-align: right;">0.006</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Execution Realignments</td> <td style="text-align: right;">(0.312)</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Sec 8125: Revised Economic Assumptions</td> <td></td> <td style="text-align: right;">(0.124)</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Congressional Action 1% Reduction</td> <td></td> <td style="text-align: right;">(0.283)</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Congressional Increases</td> <td></td> <td style="text-align: right;">4.500</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Contract Support Reduction</td> <td></td> <td></td> <td style="text-align: right;">(0.371)</td> </tr> <tr> <td style="padding-left: 20px;">NWCF CIVPERS Efficiencies</td> <td></td> <td></td> <td style="text-align: right;">(0.242)</td> </tr> <tr> <td style="padding-left: 20px;">Inflation Adjustments</td> <td></td> <td></td> <td style="text-align: right;">0.144</td> </tr> <tr> <td style="padding-left: 20px;">CIVPERS Pay Raise Rate Change</td> <td></td> <td></td> <td style="text-align: right;">0.102</td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">(0.625)</td> <td style="text-align: right; border-top: 1px solid black;">4.093</td> <td style="text-align: right; border-top: 1px solid black;">(0.367)</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Schedule: Not applicable</p> <p style="margin-top: 20px;">(U) Technical: Not applicable.</p>			(U) Funding:	FY 2005	FY 2006	FY 2007	FY06 President's Budget	25.186	27.094	32.145	FY07 President's Budget	24.561	31.187	31.778	Total Adjustments	(0.625)	4.093	(0.367)	Summary of Adjustments				Small Business Innovation Research (SBIR)	(0.300)			Department of Energy Transfer	(0.019)			Program Realignments	0.006			Execution Realignments	(0.312)			Sec 8125: Revised Economic Assumptions		(0.124)		Congressional Action 1% Reduction		(0.283)		Congressional Increases		4.500		Contract Support Reduction			(0.371)	NWCF CIVPERS Efficiencies			(0.242)	Inflation Adjustments			0.144	CIVPERS Pay Raise Rate Change			0.102	Subtotal	(0.625)	4.093	(0.367)
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2341 METOC Data Acquisition			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		8.167	9.047	10.703	10.566	10.770	10.707	11.045
RDT&E Articles Qty								

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

The major thrust of the meteorology and oceanography (METOC) Data Acquisition Project is to provide future mission capabilities to warfighters that will allow them to detect and monitor the conditions of the physical environment throughout the entire battlespace. New sensor technologies (including unmanned vehicles, tactical sensor exploitation, in-situ sensors, etc.) are identified and the most promising candidates are transitioned from the Government's and Commercial Industry's technology base to this project. These new sensor technologies are then demonstrated, validated and integrated into operational programs of record for use by warfighters. These new sensor capabilities are to provide timely and accurate METOC data and products to Operational and Tactical level of war commanders. As the emphasis on Naval Warfare has evolved from blue water operations to the littoral and deep strike battlespace, METOC data requirements have likewise evolved. The littoral and deep strike regions are extremely dynamic and complex, characterized by strong and highly variable oceanographic and atmospheric conditions. As a result, the need to accurately characterize these conditions is more crucial than ever in planning and executing Amphibious Warfare, Mine Warfare, Special Operations, Anti-Submarine Warfare, and Strike Warfare operations. Routinely available data sources, such as climatology, oceanographic and meteorological numerical models, and satellite remote sensing are necessary but not sufficient to support these warfare areas in the littoral and deep strike regions. Current operational sensors, such as the standard balloon launched radiosonde, are deployed from platforms that are frequently located great distances from the target area of interest. The principal challenge is to provide a means for the collection and dissemination of METOC data in highly variable and dynamic littoral environmental conditions or in denied, remote or inaccessible areas over extended periods of time. The principal goals of this project are to: 1) provide the means to rapidly and automatically acquire a broad array of METOC data using both off-board and on-board sensors; 2) provide an on-scene assessment capability for the tactical commander; 3) provide the tactical commander with real-time METOC data and products for operational use; 4) demonstrate and validate the use of tactical workstations and desktop computers for processing and display of METOC data and products using latest networking technologies; 5) demonstrate and validate techniques which employ data compression, connectivity and interface technologies to ingest, store, process, distribute and display these METOC data and products; 6) develop new charting and bathymetric survey techniques necessary to reduce the existing shortfall in coastal hydrographic survey requirements; and, 7) develop an expanded database for predictive METOC models in areas of interest. In FY06 and FY07 a portion of project funding is directed towards the development of the USMC Meteorological Mobile Facility (Replacement) Next Generation (METMF(R) NG) due to emergent critical USMC capability requirements. These efforts will enhance Intelligence Preparation of the Environment (IPE) capabilities to meet CNO and CFFC requirements for remote autonomous, clandestine, littoral battlespace sensing in support of Sea Shield & Sea Basing.

R-1 SHOPPING LIST - Item No. 30

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 3 of 36)

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2341 METOC Data Acquisition
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(U) B. Accomplishments/Planned Program

Autonomous Sensors (AUV/UAV)/ Sensors and Observing Systems (Unmanned Vehicles)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.797	0.517	2.001	
RDT&E Articles Quantity				

FY05 - Tested/demonstrated communications connectivity of micro and miniaturized sensor suites for mini/micro UAV and AUV platforms.
 FY06 - Deliver, test, demo prototype micro AUV. Conduct preliminary studies in support of Littoral Battlespace Sensing, Fusion, and Integration (LBSF&I) and develop ISS 60 command and control system interface. Conduct undersea vehicle modeling and simulation and engineering studies.
 FY07 - Deliver/test/demonstrate prototype Sensor Pod on operational UAVs of miniaturized sensor suites for mini/micro UAV platforms. Develop and test Network interoperability of miniaturized sensor suites for emergent UAV and AUV platforms (continued from autonomous sensors (AUV/UAV)). Ruggedize vehicles and begin development of a common command and control system. Develop prototype Autonomous Undersea Vehicles (AUV) (buoyancy) and other in-situ sensors in accordance with study results. Integrate new sensing capabilities into prototypes as part of the LBSF&I program.

Acoustic Data Inversion/ Sensors and Observing Systems (Through-the-Sensor)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.258	0.517	1.637	
RDT&E Articles Quantity				

FY05 - Completed assessments of temporal and spatial variability of littoral environments for acoustic data inversions. Continued IV&V on Geophysical Acoustic Inversion Toolkit (GAIT) Version 2 algorithms. Development and demonstration of advanced acoustic inversion techniques incorporating expert systems technology.
 FY06 -Continue development of the Geophysical Acoustic Inversion Toolkit (GAIT) Version 2 algorithms to Ocean Atmosphere Master Library (OAML). Begin development of advanced PUMA through-the-sensor inversion algorithms designed to collected volumetric sound velocity and bottom backscatter.
 FY07 - Deliver Geophysical Acoustic Inversion Toolkit (GAIT) Version 2 to OAML. Begin integration into Fleet Combat Systems. Mature networked data sharing capabilities. (from acoustic data inversion). Continue investigation of PUMA volumetric sound velocity and backscatter inversion techniques. Complete integration of the AQS-20 inversion techniques into the CNMOC Mine Warfare Workstation and the Mine Warfare Environmental Decision Aids Library (MEDAL). Continue development of the SPS-48E weather radar and SPY-1 Tactical Environmental Processor (TEP) work. Demonstrate and validate automated data acquisition and assimilation efforts as part of the LBSF&I program. Begin integration into Fleet Combat Systems. Test and validate Modular Ocean Data Assimilation System-Light (MODAS-L) string data ingest capability and volumetric sound velocity assimilation algorithms for Ocean Atmosphere Master Library (OAML) approval. Begin integration of these algorithms into submarine combat systems. Begin development of web-based submarine ambient noise assimilation capability. (Acoustic Data Acquisition). Begin development of Military Aircraft Communications Addressing and Report System (ACARS).

Ambient Noise Data/TDA/Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.218	0.517	1.775	
RDT&E Articles Quantity				

FY05 - Conducted IV&V on Dynamic Ambient Noise Prediction System (DAPS) Version 2. Updated historical shipping noise (SN) database. Delivered Dynamic Ambient Noise Prediction System (DAPS) Version 2.
 FY06 - Deliver updated historical shipping noise database to the Ocean Atmosphere Master Library (OAML).
 FY07 - Integrate the Dynamic Ambient Noise Prediction System (DAPS) Version 2 and updated historical shipping noise database into Fleet ASW Combat Systems (specifically the Sonar Tactical Decision Aid Variants and USW DSS). Development of Network based on DAPS. Add real-time ship tail Ambient Noise (AN) observations to the Shipping Noise (SN) database (from Ambient Noise Data). Continue the development of the next generation Ambient Noise database modeled after the GDB-V database. Conduct annual pre-release technical analysis and research of new National Geospatial Agency (NGA) products used by the Navy for navigation systems and maritime safety for Quality Control, Suitability of Use, and Interoperability. (from Digital MC and G Analysis Program (DMAP)). Continue to develop Tactical Decision Aids (TDA) uncertainty algorithms (from Acoustic Data Acquisition).

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2341 METOC Data Acquisition
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(U) B. Accomplishments/Planned Program

Autonomous Clandestine Sensors/ Sensors and Observing Systems (Through-the-Sensor)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.306	0.517		
RDT&E Articles Quantity				

FY05 - Delivered final version of web enabled system. Development of follow on autonomous clandestine sensors for data acquisition in denied areas. Conducted Alternatives Analysis for CNMOC AUV procurement. Continued AQS-20 through-the-sensor inversion rapid transition process. Continued development of the SPS-48E through-the-sensor weather radar development. Began development of an automated sensor placement mission planner.

FY06 - Deliver prototype capable of automated data assimilation via the Network infrastructure and Tactical Environmental Data Services (TED Services).

FY07 - Efforts rolled into the Sensors and Observing Systems (Through-the-Sensor) investment line.

Data Connectivity/MetOc in the IT Enterprise	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.213	0.517	1.490	
RDT&E Articles Quantity				

FY05 - Completed development of data connectivity with Joint Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR). Deliver TED Services Version 2 prototype.

FY06 - Deliver TED Services Version 3 prototype.

FY07 - Demonstrate and validate TED Services Version 3 and continue Network (GIG ES) compatibility effort. (from Data Connectivity).

Acoustic Data Acquisition/ Sensors and Observing Systems (Through-the-Sensor)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.289	0.662		
RDT&E Articles Quantity				

FY05 - Delivered AQS-20 mine hunting sonar prototype Version 1 and conduct IV&V on Precision Undersea Mapper (PUMA) Version 2 software. Evolutionary development of expert system acoustic data acquisition techniques to directly ingest data obtained from tactical sensors. Began addressing acoustic uncertainty and development of advanced metrics.

FY06 - Deliver Modular Ocean Data Assimilation System-Light (MODAS-L) string data ingest algorithms. Deliver prototype volumetric sound velocity assimilation algorithms. Begin development of submarine ambient noise assimilation capability. Continue the development of the next generation Ambient Noise database modeled after the GDB-V database. Continue to develop TDA uncertainty algorithms.

FY07 - Efforts rolled into the Sensors and Observing Systems (Unmanned Vehicles) investment line.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2341 METOC Data Acquisition

(U) B. Accomplishments/Planned Program

Digital MC and G Analysis Program (DMAP)/ Tactical Decision Aid and Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.086	0.400		
RDT&E Articles Quantity				

FY05 - 06 Conduct annual pre-release technical analysis and research of new National Geospatial Agency (NGA) products used by the Navy for navigation systems and maritime safety for Quality Control, Suitability of Use, and Interoperability.

FY06 - Deliver Annual Report.

FY07 - Efforts rolled into the Tactical Decision Aid (TDA) and Mission Planning investment line.

Littoral Battlespace Data Acquisition/ Sensors and Observing Systems (In-Situ)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost		1.000	2.400	
RDT&E Articles Quantity				

FY06 - Develop initial Integrated Littoral Battlespace Data Acquisition Plan. Complete the AQS-20 through the sensor inversion rapid transition process. Conduct AQS-20 end-to-end demonstration. Continue work on the development of automated adaptive survey algorithms. Complete development of the joint NOAA/USN International Oceanographic Observation System (IOOS). Continue development of an automated sensor placement mission planner. Begin development of a prototype upper air measurement system.

FY07 - Continue work on adaptive hydrographic survey work for transition to the T-AGS 60 class ships. Complete development of the joint NOAA/USN International Oceanographic Observation System (IOOS). Continue development of an advanced sensor placement mission planning system for Littoral Warfare Team (LWT) transition. Begin development of micro-miniature disposable wave and surf sensors. Complete development of a prototype upper air measurement system.

USMC Acquisition	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost		4.400	1.400	
RDT&E Articles Quantity				

FY06 - Continue development of METMF(R) NG Variant I EDM, Variant II prototype.

FY07 - Conduct METMF(R) NG software, hardware, radar, and communications upgrades. Deliver Variant I EDM and Variant II prototype.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2341 METOC Data Acquisition
<p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p><u>Line Item No. & Name</u></p> <p>Not Applicable</p> <p>RELATED RDT&E: PE 0604218N, Air/Ocean Equipment Engineering - AN/SMQ-11 satellite receiver/recorder system engineering to receive data from on-orbit Defense Meteorological Satellite Program (DMSP) sensors onboard selected ships and shore sites.</p> <p>(U) D. ACQUISITION STRATEGY:</p> <p>Acquisition, management and contracting strategies are to support the meteorology and oceanography (METOC) Data Acquisition Project to develop, demonstrate, and validate METOC data collection methods and sensors, and to evolve the ability to provide timely and accurate METOC data and products to the Tactical Commander, all with management oversight by the Program Executive Officer for Command, Control, Communications, Computers, and Intelligence and Space (PEO C4I & Space).</p> <p>(U) E. MAJOR PERFORMERS:</p> <p>Not applicable</p> <p>(U) F. METRICS:</p> <p>Earned Value Management (EVM) is used for metrics reporting and risk management.</p>		

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603207N Air/Ocean Tactical Applications			2341 METOC Data Acquisition						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	21.688	4.376	N/A	4.656	N/A	5.507	N/A	CONT	CONT	
	WX	NAWC-AD Lake	0.923		N/A		N/A		N/A	CONT	CONT	
	CP	ARL/APL	4.454	0.400	N/A	0.440	N/A	0.437	N/A	CONT	CONT	
	WX	NSWC	2.362	0.300	N/A	0.330	N/A	0.305	N/A	CONT	CONT	
	CP	New Age	2.528	0.705	N/A	0.775	N/A	0.807	N/A	CONT	CONT	
	CP	PSI/R.L. Phillips	1.555	0.500	N/A	0.550	N/A	0.548	N/A	CONT	CONT	
	CP	Neptune	1.415	0.400	N/A	0.440	N/A	0.436	N/A	CONT	CONT	
	WX	FNMOG	1.661		N/A		N/A		N/A	CONT	CONT	
	N/A	MISC	11.629	1.351	N/A	1.537	N/A	2.044	N/A	CONT	CONT	
Subtotal Software Development			48.215	8.032		8.727		10.083		CONT	CONT	
Remarks:												
Systems Engineering	CP	SSA/CSC	1.525	0.135	N/A	0.180	N/A	0.220	N/A	CONT	CONT	
Subtotal Support			1.525	0.135		0.180		0.220		CONT	CONT	
Remarks:												

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603207N Air/Ocean Tactical Applications			2341 METOC Data Acquisition						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	PD	OPTEVFOR	0.000	0.000	N/A	0.140	N/A	0.400	N/A	CONT	CONT	
Subtotal Software Development			0.000	0.000		0.140		0.400		CONT	CONT	
Remarks: Increased funding in FY07 for testing to support delivery of the Next Generation Meteorological Mobile Facility prototypes.												
Subtotal Support			0.000	0.000		0.000		0.000		CONT	CONT	
Remarks:												
Total Cost			49.740	8.167		9.047		10.703		CONT	CONT	

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EXHIBIT R4, Schedule Profile																							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4								PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications								PROJECT NUMBER AND NAME 2341 METOC Data Acquisition												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Autonomous Sensors (UVs)/ Sensors/Obs Sys (UVs)	Comm Demo				Studies				AUV Prototype and Sensor Dev/C2				TED Services Integration				GIG-ES Integration				NEXTGEN Sensor Integration							
	DEM/VAL												DEM/VAL				DEM/VAL											
Littoral Battlespace Sensing/ Sensors/Obs Sys (In-Situ)					AQS-20/SPS-48E TTS																							
									DAPS V2.0 Int Web based DAPS SN Database NGA Prod Eval				DAPS V2.0 Intl				DAPS V3.0 Web based DAPS SN Database NGA Prod Eval				DAPS V3.0 Web based DAPS SN Database NGA Prod Eval				DAPS V3.0 Web based DAPS SN Database NGA Prod Eval			
Ambient Noise Data/ TDA/Mission Planning	DAPS Ver 2.0				OAML				OAML																			
					OAML				OAML																			
DMAP/ TDA/Mission Planning					Navy Unique				Navy Unique																			
													Adaptive Survey AUV Integration GIG-ES				NITES NEXT Integration				NITES NEXT Integration				NITES NEXT Integration			
TDA/Mission Planning									AUV TAGS-60 C2/Adap Surv				DEM/VAL				AUV Int				DEM/VAL				NITES/TEDS			
Data Connectivity/ MetOc in the IT Enterprise	TED Services V2.0				TED Services V3.0				TED Services V3.0				DEM/VAL				DCGS-N Integration				TED Services V4.0				DCGS-N Integration			
USMC Acquisition																					S/W H/W, Radar, Comm Upgrades							
					1 V1 EDM 1 V2 EDM 1 V2 Prototype 1 V3				2 V1 4 V2 3 V3				2 V1 4 V2				3 V2				S/W, H/W, Radar, Comm Upgrades				S/W, H/W, Radar, Comm Upgrades			

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	7.583	9.454	10.794	10.932	11.731	10.969	11.292	
RDT&E Articles Qty								

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

The meteorological and oceanographic (METOC) Data Assimilation Project is a multi-faceted project that provides future mission capabilities for warfighters to characterize the physical environment within their battlespace. This project includes: 1) development, demonstration and validation of atmospheric and oceanographic data assimilation techniques, forecast models, database management systems, and associated software for use in both mainframe and tactical scale computers. Included are numerical oceanographic and atmospheric models for the Large Scale Computers at the Navy Fleet Numerical Meteorology and Oceanography Center, Monterey, CA and the Naval Oceanographic Office, Stennis Space Center, MS. These models, combined with a global communications network for data acquisition and distribution, form a prediction system which provides METOC data and products necessary to support naval operations worldwide in virtually every mission area; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder; 4) National Polar-orbiting Operational Environmental Satellite System (NPOESS) readiness and risk reduction preparations to develop hardware and software that will allow ground stations to receive, ingest and exploit the NPOESS Preparatory Project (NPP) data. These techniques allow for the integration and tactical application of significant oceanographic and atmospheric data derived from satellite-borne sensors. Included are techniques and algorithms for the processing of sensor measurements, conversion of raw signal data to geophysical information, analysis schemes encompassing Artificial Intelligence and Expert Systems, and other satellite data applications and field validation of end products; and, 4) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products. As weapons and sensors become more sophisticated and complex, the marine environment has an increasingly significant impact on system performance. Operational limitations induced by the ocean and atmosphere must be understood, and the resulting constraints on mission effectiveness and system employment minimized. Hence, the operating forces require more accurate worldwide forecasts of METOC conditions with increased temporal and spatial resolution. An additional challenge is posed by the emergence of new satellite sensors, which are continually adding new sources of disparate data types. In order to fully exploit this dynamic and massive volume of data, modern data base management systems (DBMS) are required, and must be tailored for individual computer configurations. Improved representation of smaller-scale phenomena, particularly in the littoral, is also an important consideration. Intelligence Preparation of the Environment (IPE) Sensor R&D to meet CNO and CFFC requirements for remote autonomous, clandestine, littoral battlespace sensing in near shore areas in support of Sea Shield & Sea Basing.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling

(U) B. Accomplishments/Planned Program

Modeling and Simulation (M&S)/Tactical Design Aids (TDA) and Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.431	0.450	1.993	
RDT&E Articles Quantity				

FY05 - CSG/ESG Environmental Simulator in support of Naval and Joint M&S efforts. Delivered progress report and Program Officer briefing.
 FY06 - Deliver Version 1.0 of CSG/ESG Environmental Simulator to NAVOCEANO. Conduct demonstration and validation. Begin development of Version 2.0.
 FY07 - Deliver Joint Modeling and Simulations support capabilities to Naval Oceanography Command (NAVOCEANO) (M&S). Continue development of Version 2.0 of the CSG/ESG Environmental Simulator. Begin development of automated quality control algorithms, sensor command and control interfaces, and communications interfaces in support of Littoral Battlespace Sensing, Fusion and Integration (LBSF&I). Participate in selected Naval Exercises and deliver post exercise strawman and final reports (from Fleet Exercises). New applications and data are delivered from the program and require verification and validation on an annual basis. Deliver annual report (from Fleet Applications and Data Verification and Validation). Continue development of automated ASW reconstruction and data collection efforts.

Coupled Data Assimilation/Assimilation and Prediction Models (Atmosphere)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.505	0.550	1.992	
RDT&E Articles Quantity				

FY05 - Delivered NRL Atmospheric Variational Data System (NAVDAS) Version 2. Development of next generation coupled assimilation techniques incorporating Automated Expert Systems.
 FY06 - Begin operational test of NRL Atmospheric Variational Data System (NAVDAS) Version 3. Re-code NAVDAS to conform to Weather Research and Forecasting (WRF) compatibility requirements. Development of next generation coupled assimilation techniques incorporating direct satellite derived radiance data.
 FY07 - Complete NRL Atmospheric Variational Data System (NAVDAS) Version 3 OPTTEST and deliver to FNMOC. Investigate and incorporate Automated Techniques into the next generation data assimilation system. Re-code NRL Atmospheric Variational Data System (NAVDAS) to conform to Weather Research and Forecasting (WRF) compatibility requirements (from Coupled Data Assimilation). Continue implementing Weather Research and Forecasting (WRF) compatibility requirements. Explore incorporation of high-resolution Aerosol analyses and forecasts (from High-Resolution Models). Begin development of COAMPS V4. Continue investigations into improved Tropical Cyclone forecasting techniques. Begin Development of Hi-Res (~27km) Global Model. Complete COAMPS Dust algorithm integration. Begin COAMPS OS/NOWCAST integration. Develop advanced data fusion algorithms for weather radars in support of the LBSF&I program.

Fleet Exercises/TDA and Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.500	0.550		
RDT&E Articles Quantity				

FY05 - Participated in selected Naval Exercises and deliver post exercise strawman and final reports. Expanded scope of fleet exercise participation to include integrated multi-sensor (data collection to application) demonstrations. Continued development of Automated ASW Reconstruction efforts.
 FY06 - Participate in selected Naval Exercises and deliver post exercise strawman and final reports. Continue development of Automated ASW Reconstruction efforts.
 FY07 - Efforts incorporated into the TDA and Mission Planning investment line.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling
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(U) B. Accomplishments/Planned Program

High-Resolution Forecast Models/ Assimilation and Prediction Models (Atmosphere)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.756	0.928		
RDT&E Articles Quantity				

FY05 - Delivered prototype advanced land-surface modeling system for integration into Coupled Atmospheric Mesoscale Prediction Systems (COAMPS). Continued research directed towards improved Tropical Cyclone forecasts.
 FY06 - Deliver Version 3 of Coupled Atmospheric Mesoscale Prediction Systems (COAMPS). Re-code Coupled Atmospheric Mesoscale Prediction Systems (COAMPS) to conform to Weather Research and Forecasting (WRF) compatibility requirements. Begin integration of COAMPS Dust algorithms. Continue research directed towards improved Tropical Cyclone forecasts.
 FY07 - Efforts incorporated into the "Assimilation and Prediction Models (Atmosphere)" product line.

Basin Scale Ocean Models/ Assimilation and Prediction Models (Oceans)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.856	0.900	2.622	
RDT&E Articles Quantity				

FY05 - Developed prototype Adriatic Sea model. Completed development of next generation coastal and enclosed basin tactical scale oceanographic models. Completed validation of the EAS model. Began development of NCOM relocateable grid, dynamic MODAS, and HYCOM.
 FY06 - Complete the transition of Adriatic Sea model. Transition rapid relocatability capability. Incremental development of coupled air/ocean models for selected geographical locations in response to emergent requirements. Complete development of NCODA MVOI. Continue development of NCOM relocateable grid, dynamic MODAS, and HYCOM. Begin development of NCODA Vert Cov.
 FY07 - Incremental development of coupled air/ocean models for selected geographical locations in response to emergent requirements. Complete development of MODAS dynamic. Begin development of MODAS NEXGEN. Continue development of HYCOM. Complete development of NCOM relocateable. Begin development of NCOM Region A. Complete development of NCODA Vertical Cov. Begin development of NCODA Horizontal Cov. Continue development of advanced ADCIRC and coastal wave and surf algorithms. Develop advanced data fusion algorithms in support of the LBSF&I program.

Data Assimilation/ Assimilation and Prediction Models (Space)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.688	1.248	1.317	
RDT&E Articles Quantity				

FY05 - Transitioned applications using WindSat, Meteosat Second Generation (MSG), the Special Sensor Microwave Imager and Sounder (SSMIS), and MTSAT (Japanese replacement).
 FY06 - Continue to transition applications using next generation WindSat, Meteosat Second Generation (MSG), the Special Sensor Microwave Imager and Sounder (SSMIS), and MTSAT (Japanese replacement). Begin development of the next generation of Satellite Workstations.
 FY07 - Continue to transition applications using next generation WindSat, Meteosat Second Generation (MSG), the Special Sensor Microwave Imager and Sounder (SSMIS), and MTSAT (Japanese replacement). Incorporation of Automated Expert System techniques (from Data Assimilation). Continue improvements to the Satellite Workstation.

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(U) B. Accomplishments/Planned Program			
Automated Objective Processing/ Assimilation and Prediction Models (Oceans)	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.916	0.800	
RDT&E Articles Quantity			
<p>FY05 - Delivered data assimilation upgrades.</p> <p>FY06 - Deliver prototype global Navy Coastal Ocean Model (NCOM) prediction system upgrades to the Naval Oceanography Command for testing.</p> <p>FY07 - Incorporated into the "Assimilation and Prediction Models (Oceans)" investment line.</p>			
Tide/Surf Data Visualization/ Assimilation and Prediction Models (Oceans)	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.483	0.550	
RDT&E Articles Quantity			
<p>FY05 - Developed and delivered documentation for Atmospheric Modeling Oversight Panel Transition to Naval Oceanography Command (NAVOCEANO) for approval.</p> <p>FY06 - Finalize approved documentation and deliver Version 1 to Ocean Atmosphere Master Library (OAML). Begin development of advanced ADCIRC and coastal wave and surf algorithms.</p> <p>FY07 - Incorporated into the "Assimilation and Prediction Models (Oceans)" investment line.</p>			
NEXGEN Acoustic Models/ Assimilation and Prediction Models (Acoustics)	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.106	1.200	1.870
RDT&E Articles Quantity			
<p>FY05 - Delivered Semi-Empirical Surface Scattering Strength Algorithm (SESSS) Version 2. Began development of SESSS Version 3.0 (4-10 kHz gap). Incorporated Digital Bathymetric Database (DBDB) Version 5 APIs and consolidated existing databases, upgrade NAUTILUS run options. Continued annual upgrades to the STAPLE system.</p> <p>FY06 - Incorporate variable range-step option in Range Acoustic Model (RAM) 4.0, consolidate disparate bottom databases into one consolidated database Geoacoustic Database Variable Resolution (GDB-V). Integrate latest acoustic models into the Geo Acoustic Inversion Toolkit (GAIT). Continue development of SESSS Version 3.0 (4-10 kHz gap). Continue annual upgrades to the STAPLE system.</p> <p>FY07 - Demonstrate and validate RAM 4.0 3D and deliver to Ocean Atmosphere Master Library (OAML). Begin development of RAM 5.0 4D. Complete bottom database consolidation. Continue development of SOA GAIT. Begin development of active algorithms for the Geo Acoustic Inversion Toolkit (GAIT). Incorporate Automated Expert Systems model selection algorithms into the next generation Range Acoustic Model (RAM) (from NEXGEN Acoustic Models). Complete integration of initial uncertainty algorithms into Fleet Tactical Decision Aids (TDAs). Continue development of next generation mid-frequency bottom loss/bottom scatter models and databases for shallow water environments. Begin development of a fully automated version of Geophysical Acoustic Inversion Toolkit (GAIT) (from Shallow Water Acoustics). Continue annual upgrades to the STAPLE system. Complete SESSS 3.0 (4-10 kHz gap).</p>			

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling
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(U) B. Accomplishments/Planned Program

Shallow Water Acoustics/ Assimilation and Prediction Models (Acoustics)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.748	0.800		
RDT&E Articles Quantity				

FY05 - Completed final Comprehensive Acoustic System Simulation (CASS)/Active System Performance Model (ASPM) assessment and delivered final report. Integrated multistatics modeling and performance prediction techniques.
 FY06 - Begin development of a Ship of Opportunity version of Geophysical Acoustic Inversion Toolkit (GAIT). Integration of uncertainty predictions into Fleet Tactical Decision Aids (TDAs).
 FY07 - Incorporated into the "Assimilation and Prediction Models (Acoustics)" investment line.

Fleet Applications and Data Verification & Validation/ TDA and Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.594	0.450		
RDT&E Articles Quantity				

FY05 - New applications and data were delivered from the program and required verification and validation on an annual basis. Delivered Annual Report.
 FY06 - Deliver Annual Report.
 FY07 - Efforts incorporated into the TDA and Mission Planning investment line.

Sensors and Observing Systems (Unmanned Vehicles)	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost		1.028	1.000	
RDT&E Articles Quantity				

FY06 - Develop and deliver initial engineering documentation. Develop in-depth data assimilation methods to support various evolving littoral sensors such as the Next Generation Upper Air Sensor, Seaglider, and Helicopter and/or Unmanned Aerial Vehicle (UAV) specific sensors. Develop new sensors and/or reconfigure existing littoral sensors to support littoral Undersea Warfare (USW), Mine Warfare (MIW), Special Operations (SPECOPS) and other Naval Operations. Develop Next Generation Upper Air Sensor prototype. Conduct glider Alternatives Analysis, data compression and transmission investigations, system hardening, common control interface development, and automated trim and balance capability development.
 FY07 - Develop in-depth next generation data assimilation methods to support various evolving littoral sensors such as the Next Generation Upper Air Sensor, UUV gliders, and Helicopter and/or Unmanned Aerial Vehicle (UAV) specific sensors. Demonstrate prototype sensors and deliver post-demonstration report (from Littoral Battlespace Sensor Data Assimilation). Continue development of UV data compression, system hardening, common control interface, and an automated balance and trim capability. Begin integration of a UUV acoustic sensor capability. Conduct demonstration of new capabilities in support of LBSF&I program.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling
<p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p><u>Line Item No. & Name</u></p> <p>Not applicable</p> <p>(U) D. ACQUISITION STRATEGY:</p> <p>Acquisition, management and contracting strategies to support the meteorological and oceanographic (METOC) Data Assimilation Project which is a multi-faceted program which includes: 1) development, demonstration and validation of atmospheric and oceanographic data assimilation techniques, forecast models, database management systems, and associated software for use in both mainframe and tactical scale computers; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder; and, 4) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products, all with management oversight by Program Executive Officer for Command, Control, Communications, Computers, and Intelligence and Space (PEO C4I & Space).</p> <p>(U) E. MAJOR PERFORMERS:</p> <p>Not applicable</p> <p>(U) F. METRICS:</p> <p>Earned Value Management (EVM) is used for metrics reporting and risk management.</p>		

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603207N Air/Ocean Tactical Applications			2342 METOC Data Assimilation and Modeling						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	50.283	6.247	N/A	7.502	N/A	8.597	N/A	CONT	CONT	
	WX	NAWC-WD, Pax	1.520	0.208	N/A	0.253	N/A	0.285	N/A	CONT	CONT	
	PD	APL	0.985	0.290	N/A	0.353	N/A	0.397	N/A	CONT	CONT	
	Grant	Univ. S. Miss.	2.413		N/A		N/A		N/A	CONT	CONT	
	CP	Neptune	1.001	0.325	N/A	0.396	N/A	0.445	N/A	CONT	CONT	
	CP	New Age	0.700	0.325	N/A	0.396	N/A	0.445	N/A	CONT	CONT	
	N/A	MISC	12.033	0.188	N/A	0.554	N/A	0.623	N/A	CONT	CONT	
Subtotal Software Development			68.935	7.583		9.454		10.794		CONT	CONT	
Remarks:												
Systems Engineering	CP	SSA/CSC	0.295							CONT	CONT	
Subtotal Support			0.295							CONT	CONT	
Remarks:												
Total Cost			69.230	7.583		9.454		10.794		CONT	CONT	

EXHIBIT R4, Schedule Profile																	DATE: February 2006															
APPROPRIATION/BUDGET ACTIVITY																	PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME							
RDT&E, N / BA-4																	PE 0603207N Air/Ocean Tactical Applications								2342 METOC Data Assimilation and Modeling							
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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				
Coupled Data Assimilation/ Assim/Pred Models (Atm)	NAVDAS V2.0				NAVDAS V3.0																											
	WRF																															
Hi-Res Forecast Models/ Assim/Pred Models (Atm)	COAMPS V2.0				COAMPS V3.0																											
	WRF				Radar Assim																											
Assim/Pred Models (Atm)									NAVDAS V3				COAMPS NOWCAST/NAVDAS				NEXGEN Hi-Res Re-locatable															
									Hi-Res Aerosols				Hi-Res Global (~27km)				Multi constitutes (aero)				NEXGEN Hi-Res Re-locatable											
Basin Scale Ocean Models/ Assim/Pred Models (Ocn)	EAS				NCOM Relocateable																											
					Dynamic MODAS																											
					HYCOM																											
Automated Obj Processing/ Assim/Pred Models (Ocn)					NCOM Upgrades																											
Tide/Surf/Data Visualization/ Assim/Pred Models (Ocn)					ADCIRC																											
					Costal Wave/Surf																											
Assim/Pred Models (Ocn)									MODAS Dyn				MODAS 3.0				MODAS NEXGEN															
									NCOM Relocat				Region A				HYCOM Regional				HYCOM Region A											
NEXGEN Acoustic Models/ Assim/Pred Models (Ac)	SESS V2.0				RAM 4.0																											
	STAPLE Upgrades				SESS 3.0																											
Shallow Water Acoustics/ Assim/Pred Models (Ac)	CASS/ASPM				SOA GAIT																											
					Uncertainty																											
Assim/Pred Models (Ac)									RAM 4.0 3D				RAM V5.0 4D				NEXGEN RAM															
									SESS V3.0				SOA/Active GAIT				SOA GAIT				Active GAIT											
									STAPLE Upgrades				STAPLE TTS																			

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EXHIBIT R4, Schedule Profile																					DATE: February 2006							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4								PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications								PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Modeling and Simulation/ TDA and Mission Planning			CSG/ESG Env Sim V1.0				▲	V2.0																				
Fleet Apps/Data V&V/ TDA and Mission Planning		V&V		▲		V&V		▲																				
Fleet Exercises/ TDA and Mission Planning		Strawman		▲		Strawman		▲																				
TDA/Mission Planning																												
Data Assimilation/ Assim/Pred Models (Space)		WindSat		▲		NEXGEN Sat																						
Littoral Battlespace Sensing/ Sensors/Obs Systems (UVs)		SSMIS				Workstation																						

R-1 SHOPPING LIST - Item No. 30

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2343 Tactical METOC Applications			
COST (\$ in Millions)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Project Cost		6.598	6.902	8.685	8.187	8.105	8.134	8.360
RDT&E Articles Qty								

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

The METOC Data Applications Project provides future operational effects decision aid capabilities for Navy and Marine Corps warfighters in the context of Joint Operations. This project identifies and transitions state-of-the-art decision support software technologies from the Government's and Commercial Industry's technology base and then demonstrates and validates these capabilities before fielding. These future software decision support tools are intended to provide platform, sensor, communications, and weapon systems performance assessments for warfighters in terms of their littoral and deep-strike battlespace environments. These assessments allow mission planners and warfighters, from the unit to theater level, to optimize their sensor employment on airborne, surface, and subsurface platforms in support of all Naval Composite Warfare mission areas including Undersea Warfare (USW), Anti-Submarine Warfare (ASW), Mine Warfare (MIW), Amphibious Warfare (AMW), Anti-Surface Warfare (ASUW), Anti-Air Warfare (AAW), Strike Warfare (STW), and Special Warfare. Performance assessments leading to improvements in operational and tactical control are conducted through a two-tiered approach: 1) METOC Decision Aids (MDAs); and, 2) Operational Effects Decision Aids (OEDAs). MDAs consist of a series of analysis tools which characterize the physical environment conditions of the battlespace based on the best set of physical environment data available at the time (i.e., some combination of historical and/or real-time (or near real-time) in-situ data. OEDAs then use the MDA information by fusing it with relevant, often-classified sensor and target data to predict how own-force weapons and sensor systems will perform against hostile targets. Performance results are displayed in tabular and graphic formats for use by mission planners and combat/weapon system operators to develop ASW and MIW search and localization plans, USW/AAW/ASUW screens, STW profiles, AMW ingress and egress points, and for other warfare considerations. MDAs and OEDAs typically use data derived from sensors developed in Project 2341 (METOC Data Acquisition) and assimilated by software produced by Project 2342 (METOC Data Assimilation and Modeling). MDAs and OEDAs also use data obtained through direct interfaces to Navy combat systems. A current emphasis area of the project is the development of new combat system and mine warfare performance prediction and MDA/OEDA capabilities required to characterize and/or predict sensor and weapons system performance in the highly complex littoral environments in support of regional conflict scenarios. It addresses multi-warfare areas, particularly Mine Warfare, shallow water ASW, and missile and air defense/strike capabilities.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2343 Tactical METOC Applications

(U) B. Accomplishments/Planned Program

Electromagnetic and Electro-optical (EM/EO) Decision Aids/ TDA/Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.447	1.266	8.685	
RDT&E Articles Quantity				

FY05 - Completed development of Target Acquisition Weather Software (TAWS) and delivered Version 2.0 including new sensor data and backgrounds consistent with US Navy and US Marine Corp missions. Continued development of the TAWS 3.0 stand alone version, to include integration of DTED Terrain and JAWS targets.
 FY06 - Complete development of Target Acquisition Weather Software (TAWS) Version 3.0 to include new sensor data and backgrounds consistent with Joint Operations. Continue development of TAWS 4.0 (web-enabled). Development of upgrades to next generation electromagnetic and electro-optical (EM/EO) performance prediction systems to include incorporation of new Naval and Joint Sensor Suites. Begin porting Advanced Refractive Effects Prediction System (AREPS) code to JAVA. Begin development of the Naval Integrated Tactical Environmental System Next Generation (NITES NG).
 FY07 - Complete development of TAWS 4.0. Begin development of TAWS 4.4 Enterprise Portal. Complete development of AREPS JAVA port. Begin development of an advanced EM Model Server. Conduct annual update of MEDAL acoustic databases and models. Continue development of NITES NG (DCGS-N integration, etc.).

Mine Littoral Warfare Tactical Decision Aids (TDA)/ TDA/Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.447	1.567		
RDT&E Articles Quantity				

FY05 - Delivered Mine Warfare Environmental Data Applications Library (MEDAL) Build 10.
 FY06 - Development to incorporate additional mine littoral warfare decision aids in applicable performance prediction systems. Develop Mine Warfare Environmental Data Applications Library (MEDAL) Build 11 to include the incorporation of the new Geoacoustic Database - Variable Resolution (GDB-V) as well as the incorporation of the new Battlespace Profiling System (BPS).
 FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

Tactical Decision Aids (TDA) COTS Visualization/ TDA/Mission Planning	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.385	1.672		
RDT&E Articles Quantity				

FY05 - Delivered 4D-Vis prototype. Delivered technical reports. Incremental development of next generation multi-dimensional Tactical Decision Aid (TDA) COTS visualization techniques and integrate into appropriate platform Advanced Development Models (ADMs).
 FY06 - Development of Network integration via Commercial Joint Mapping Tool Kit (CJMTK) and integration of evolving GIS based technology.
 FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2343 Tactical METOC Applications

(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Platform Vulnerability/TDA/Mission Planning			
Accomplishments/Effort/Subtotal Cost	1.126	1.266	
RDT&E Articles Quantity			

FY05 - Delivered platform vulnerability assessment Tactical Decision Aid (TDA) Version 3 into surface ship, submarine and air ADMs to perform vulnerability assessment for acoustic and non-acoustic sensors and weapons. Evaluated functionality during at-sea tests. Deliver technical reports.
 FY06 - Development of Tactical Decision Aid (TDA) Version 4 to include integration of new electromagnetic and electro-optical (EM/EO), Target Acquisition Weather Software (TAWS), and advanced visualization techniques such as 4D Visualization.
 FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

	FY 05	FY 06	FY 07
Sensor Interface Capabilities/TDA/Mission Planning			
Accomplishments/Effort/Subtotal Cost	1.193	1.131	
RDT&E Articles Quantity			

FY05 - Developed and deliver Build 3.0. Delivered technical reports. Incremental development of environmental sensor interface capabilities. Continued Integrated Ocean Observing System (IOOS) effort.
 FY06 - Evolutionary development of Build 3.5. Evaluate functionality during at-sea tests and deliver technical reports. Complete Integrated Ocean Observing System (IOOS) effort.
 FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2343 Tactical METOC Applications
<p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p><u>Line Item No. & Name</u></p> <p>Not applicable</p> <p>RELATED RDT&E: PE 0604218N (Air/Ocean Equipment Engineering). TESS/NITES will incorporate METOC data applications.</p> <p>(U) D. ACQUISITION STRATEGY:</p> <p>Acquisition, management and contracting strategies are to support the METOC Data Applications project to continue the development of state-of-the-art software capabilities that provide sensor, communication, and weapon system performance assessments across the full spectrum of open ocean and littoral operating environments, meteorology and oceanography , all with management oversight by Program Executive Officer for Command, Control, Communications, Computers, and Intelligence and Space (PEOC4I & Space).</p> <p>(U) E. MAJOR PERFORMERS:</p> <p>N/A</p>		

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603207N Air/Ocean Tactical Applications			2343 Tactical METOC Applications						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NUWC	1.400							CONT	CONT	
	WX	SSC SD	2.775	0.335	N/A	0.349	N/A	0.430	N/A	CONT	CONT	
	WX	NRL	1.761	0.285	N/A	0.297	N/A	0.366	N/A	CONT	CONT	
	CP	NAVSEA	30.167	5.603	N/A	5.982	N/A	7.539	N/A	CONT	CONT	
	CP	LOCKHEED	1.053							CONT	CONT	
	N/A	MISC	5.720	0.375	N/A	0.275	N/A	0.350	N/A	CONT	CONT	
Subtotal Product Development			42.876	6.598		6.902		8.685			65.061	
Remarks:												
	CP	IPD	0.595							CONT	CONT	
Subtotal Support			0.595							CONT	CONT	
Remarks:												
Total Cost			43.471	6.598		6.902		8.685		CONT	CONT	

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EXHIBIT R4, Schedule Profile																								DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY								PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME																
RDT&E, N / BA-4								PE 0603207N Air/Ocean Tactical Applications								2343 Tactical METOC Applications																
Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012			
	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
EM/EO Decision Aids/ TDA/Mission Planning	TAWS 2.0				TAWS 3.0																											
					JAVA AREPS																											
Mine Warfare TDAs/ TDA/Mission Planning	MEDAL Update				MEDAL Update																											
TDA COTS Visualization/ TDA/Mission Planning	4D Prototype				NITES NG																											
Platform Vulnerability/ TDA/Mission Planning	NITES II Upgrade				NITES II Upgrade																											
Sensor Interface Capabilities/ TDA/Mission Planning					IOOS																											
TDA/Mission Planning									TAWS 4.0 EM Server NITES NG				TAWS 4.4 NITES NG EM Server				TAWS 4.6				NITES NG LBSI&F TAWS 5.0				NITES NG DCGS-N							
									MEDAL Upgrade				MEDAL Upgrade				MEDAL Upgrade				MEDAL Upgrade				MEDAL Upgrade				MEDAL Upgrade			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2344 Precise Timing and Astrometry			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.247	1.284	1.596	1.210	1.262	1.312	1.312
RDT&E Articles Qty								

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

The major thrust of the Precise Timing and Astrometry Project is to provide future capabilities that directly support the mission of the U.S. Naval Observatory (USNO). These future mission capabilities are intended to:

- 1) address DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions (including objects at other than optical wavelengths) and the stellar inertial reference system (to which all navigation, guidance, and positioning systems are ultimately referred);
 - 2) develop techniques for the prediction of the Earth's instantaneous orientation with respect to the stellar inertial reference system;
 - 3) oversee the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks; and,
 - 4) develop advanced electronic light detectors and interferometry in the optical and infrared wavelength regions for very precise determination of the positions of both faint and bright stars, satellite tracking, and space debris studies.
- DoD Instruction 5000.2 assigns to the Navy the responsibility for coordinating Precise Time and Time Interval (PTTI) requirements and for maintaining a PTTI reference standard (astronomical and atomic) for use by all DoD Services, Federal agencies, and related scientific laboratories. The Navy is also responsible for providing astronomical data for navigation, positioning, and guidance, including space. Some operational and many emerging requirements surpass current support capabilities. In response to these DoD requirements, this project transitions Research (6.1) and Exploratory Development (6.2) efforts, as well as developments in the civilian sector, into the operational capabilities of the USNO.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2344 Precise Timing and Astrometry

(U) B. Accomplishments/Planned Program

Time Transfer/ Precise Timing, Astrometry, & Reference Frames	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.437	0.391	1.596	
RDT&E Articles Quantity				

FY05 - Delivered technical reports, incremental developments of time transfer techniques. Completed production of six SAASM Rx units. Began development of M Code Timing Rx.
 FY06 - Development of next generation GPS Independent Time Transfer. Complete design of preliminary Prototype M Code Timing Rx.
 FY07 - Begin development of the algorithm for the atomic fountain timescale. Begin a 24/7 demonstration of the Ensemble Fountain Clock Systems. Complete and demonstrate the Prototype M Code GPS receiver. Begin development of the USNO Robotic Astrometric Telescope (URAT) Focal Plane Array (FPA). Conduct a pre-operational demonstration of the CCD array for the USNO Robotic Astrometric Telescope.

Earth Orientation/Astrometry/ Precise Timing, Astrometry, & Reference Frames	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.349	0.430		
RDT&E Articles Quantity				

FY05 - Evolutionary developments of next-generation earth orientation techniques. Delivered technical reports. Demonstrated Complex Focal Plane Array for Astrometry.
 FY06 - Complete Orion Array Prototype Detector. Incremental development of next generation earth orientation techniques (Astrometric Telescope). Begin development of radiation mitigation techniques for space operations.
 FY07 - Efforts rolled into the "Precise Timing, Astrometry & Reference Frames" Investment line.

Master Clock/ Precise Timing, Astrometry, & Reference Frames	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.461	0.463		
RDT&E Articles Quantity				

FY05 - Performed initial testing of next generation Master Clock. Exploitation of emergent Master Clock technologies (Rubidium Fountain). Completed Rubidium Fountain Prototype (pre-operational status).
 FY06 - Perform initial testing and complete initial Technical Reports. Demonstrate 24/7 operational capability of Rubidium Fountain Clock. Begin development of Ensemble Fountain Clock Systems.
 FY07 - Efforts rolled into the "Precise Timing, Astrometry & Reference Frames" Investment line.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME 2344 Precise Timing and Astrometry
<p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p><u>Line Item No. & Name</u></p> <p>Not applicable.</p> <p>(U) D. ACQUISITION STRATEGY:</p> <p>Acquisition, management and contracting strategies are to support the Precise Timing and Astrometry Project in direct support of the U.S. Naval Observatory (USNO) in: 1) addressing DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions and the stellar inertial reference system ; 2) developing techniques for the prediction of the Earth's instantaneous orientation with respect to the stellar inertial reference system; 3) overseeing the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks; and, 4) developing advanced electronic light detectors and interferometry in the optical and infrared wavelength regions for very precise determination of the positions of both faint and bright stars, satellite tracking, and space debris studies, all with management oversight by Program Executive Officer for Command, Control, Communications, Computers, and Intelligence and Space (PEOC4I & Space).</p> <p>(U) E. MAJOR PERFORMERS:</p> <p>N/A</p>		

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603207N Air/Ocean Tactical Applications			2344 Precise Timing and Astrometry						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	Naval Observatory	8.115	1.247	N/A	1.284	N/A	1.596	N/A	CONT	CONT	
	N/A	MISC	0.094							CONT	CONT	
Subtotal Software Development			8.209	1.247		1.284		1.596		CONT	CONT	
Remarks:												
Subtotal Support												
Remarks:												
Total Cost			8.209	1.247		1.284		1.596		CONT	CONT	

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EXHIBIT R4, Schedule Profile																								DATE: February 2006							
APPROPRIATION/BUDGET ACTIVITY								PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME															
RDT&E, N /								BA-4								PE 0603207N Air/Ocean Tactical Applications								2344 Precise Timing and Astrometry							
Fiscal Year	2005				2006				2007				2008				2009				2010				2011						
	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			
Time Transfer/ Precise Timing, Astrometry, & Reference Frames	SAASM Rx			▲ M Code Timing Rx																											
Earth Orientation/ Precise Timing, Astrometry, & Reference Frames	Focal Plane Array			▲ Radiation Mitigation Demo																											
Master Clock/ Precise Timing, Astrometry, & Reference Frames	Rubidium Prototype			▲ Rubidium Demo				Ensemble Fnth Clk																			Optical Atomic Clock				
Precise Timing, Astrometry, & Reference Frames								M Code Demo	▲				Ensemble Clk Demo				◆ GPS III Timing Rx													▲	
								Atomic Fountain																				Space Focal Plane Array			
								URAT FPA																							
								Ensemble Clk Demo																							

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications	PROJECT NUMBER AND NAME Various Congressional Increases
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(U) B. Accomplishments/Planned Program

9204 Marine Mammal Tracking and Mitigation	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.966	0.000	0.000
RDT&E Articles Quantity			

9890 3D-CMAPS	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	2.500	0.000
RDT&E Articles Quantity			

9891 Gateway System	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	1.000	0.000
RDT&E Articles Quantity	0	0	0

9892 Littoral Acoustic Demonstration Center	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	1.000	0.000
RDT&E Articles Quantity			

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603216N. AVIATION SURVIVABILITY		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	38.313	44.261	6.177	6.319	6.452	6.587	6.732	
0584 A/CREW PROTECT CLOTHING/DEVIC	4.328	2.791	2.395	2.447	2.501	2.556	2.613	
0591 A/CREW SERV & VUNERAB & SAFET	5.850	1.549	1.550	1.590	1.621	1.654	1.691	
0592 A/CREW & ORDANCE SAFETY	1.533	1.259	1.529	1.563	1.595	1.628	1.662	
1819 A/C PROT	.560	.562	.703	.719	.735	.749	.766	
9170 MODULAR ADVANCED VISION SYSTEM	4.082							
9173 ROTORCRAFT EXTERNAL AIRBAG	3.690							
9346 EQUIPMENT LIFE EXTENSION PROGRAM (ELEP)	1.458							
9505 ADVANCED MARITIME TECHNOLOGY CENTER AT	1.835							
9506 INTEGRATED MANIFOLD AND TUBE CERAMIC	4.055							
9507 INTELLIGENT AUTONOMY TECHNOLOGY	2.417							
9508 INTELLIGENT CONTROL SYSTEM FOR SWARM	3.669							
9510 SILVER FOX UAV (NAVAIR)	4.836							
9999 CONGRESSIONAL ADDS		38.100						

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios.

*Totals may not add due to rounding.

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CLASSIFICATION:	
EXHIBIT R-2, RDT&E Budget Item Justification	DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability
<p>(U) Project 0584 develops protective clothing and devices to safeguard aircrew against environmental and physiological threats/hazards during flight and escape. Project 0584 strives to improve the full spectrum of life support equipment ranging from advanced laser eye protection to integrated life support systems to ejection and crashworthiness. In addition to protection, project 0584 enhances situational awareness and target acquisition through the development of helmet mounted displays (HMDs) and smart integrated life support systems. 0584 develops and transitions state-of-the-art life support equipment and protective devices to optimize human/warfighter effectiveness, safety, and survival. Projects 0591, 0592, and 1819 focus on platform survivability, addressing the reductions in aircraft susceptibility to enemy and non-combat threats, as well as aircraft vulnerabilities to conventional, nuclear, chemical, biological, radiological and directed energy weapons. The Aircraft Survivability, Vulnerability and Safety project expands the survivability technology base and develops prototype hardware which is required to improve the survivability of Naval aircraft. Aircraft and Ordnance Safety transitions generic insensitive munitions technology to Navy and Marine Corps air weapons, ensuring that they are insensitive to fast cook-off, slow cook-off, and fragment impact and sympathetic detonation. Carrier Aircraft Fire Suppression Systems develops improved fire fighting systems and fire protective measures for aircraft carriers. Project 9170 (Congressional Add) will shift from traditional cathode ray tube (CRT) based helmet mounted displays to a reflective liquid crystal (RLCD) displays using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored. Project 9173 (Congressional Add) will address the level of protection afforded and feasibility of an external rotorcraft airbag and development of "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway. Project 9346 reflects a Congressional Add that will fund an equipment life extension laboratory for definition of systems no longer procurable but critical to functionality of weapons systems. Project 9505 (Congressional Add) will support an engineering facility to modify and optimize effective new aviation and information technologies to port the capability over to small maritime craft for special operations. Project 9506 (Congressional Add) will support the feasibility of integrating a Ceramic Oxygen Generator (COGS) into aircraft. Project 9507 (Congressional Add) will support and demonstrate a higher level of Autonomy and Artificial Intelligence for Unmanned Systems to allow them to operate and be accepted in a manned environment. Project 9508 (Congressional Add) develop SWARM, a system consisting of many low cost UAVs (Unmanned Air Vehicles) operating autonomously to achieve a mission with minimum operator intervention. Project 9510 (Congressional Add) will support the assessment of Silver Fox's ability to provide surveillance during mine clearing operations. Project 9999 (Congressional Adds).</p>	

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006																									
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0584, A/CREW PROTECT CLOTHING/DEVIC																									
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011																									
0584 A/CREW PROTECT CLOTHING/DEVIC	4.328	2.791	2.395	2.447	2.501	2.556	2.613																									
RDT&E Articles Qty																																
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project 0584 develops, demonstrates, and validates technology options for integrated aircrew emergency and life support systems designed to enhance mission effectiveness, in-flight protection and survivability. The project covers fixed and rotary wing life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and cockpit integration programs. It responds to a number of operational requirements documents, including OR# 210-05-88 for Chemical and Biological (CB) Protection, OR#099-05-087 for Laser Eye Protection, and the joint Air Force/Navy (CAF 208-93) for an Aerospace Control Helmet Mounted Cueing System. This project also includes a Congressional plus up for the development of an Air Bag Attenuated Airborne Troop Seat. This efforts goal is to use air bag technology to produce an energy attenuating seating system that is more efficient, more capable, and lighter.</p>																																
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td style="width:10%;">FY 2005</td> <td style="width:10%;">FY 2006</td> <td style="width:10%;">FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="right">1.360</td> <td align="right">1.284</td> <td align="right">1.145</td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Advanced Integrated Life Support System (AILSS) program. Exercise option to begin the development of frequency Agile flight worthy unity magnification goggles (laser eye protection). Laboratory and field testing of Agile flight worthy goggles prototypes. Focus on alternative materials and optical design to maximize performance. Finalize unity magnification frequency Agile flight worthy goggles and ready for EMD transition. Integrate Smart Advanced Integrated Life Support System (SAILSS) with on-board oxygen and personal air conditioning systems. Integration of SAILSS with focus on imbedded microsensors and personal air conditioning system. Tactical variant of AILSS (TAILSS), move SAILSS into final phases of laboratory testing. Crewstation technology laboratory demonstration of Active Network Guidance Emergency Logic (ANGEL). System integration laboratory demonstration of ANGEL. Combine flight testing of on board/off board data correlation and ANGEL.</p> </div> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td style="width:10%;">FY 2005</td> <td style="width:10%;">FY 2006</td> <td style="width:10%;">FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="right">2.968</td> <td align="right">1.507</td> <td align="right">1.250</td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Advanced Technology Crew Station (ATCS) program. System integration and flight testing of Advanced Helmet Vision System enhanced resolution Crusader. I2/Thermal mode control studies. Pilot Vehicle Interface (PVI) on-board/off board data correlation on test aircraft and began flight testing. Advanced Technology Escape System (ATES) ejection seat trajectory and crashworthy seat stroke models with biodynamic models exploring various integrated aircrew head/neck protection configurations for ejection safe helmet mounted systems. Incorporate computational fluid dynamics and parachute models. Preliminary ergonomic seating design, validated BioRID performance and mature final version. Incorporate models of helmet mounted displays into the PVI to support testing and validation of on board/off board data correlation. Horizontal accelerator/vibrating platform assessment of ergonomics, posture, and crashworthiness. Development of Charge Coupled Device (CCD) based, high resolution Advanced Helmet Vision System (follow on to the low resolution Crusader HMD). Integrate results of injury prevention research into protective equipment to include helmet mounted devices and into ejection seat design for improved seal performance, retention, and safety. Development and testing of side facing seat and improved restraint system. Focus on shock and vibration work.</p> </div>										FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	1.360	1.284	1.145	RDT&E Articles Qty					FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	2.968	1.507	1.250	RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																													
Accomplishments / Effort / Sub-total Cost	1.360	1.284	1.145																													
RDT&E Articles Qty																																
	FY 2005	FY 2006	FY 2007																													
Accomplishments / Effort / Sub-total Cost	2.968	1.507	1.250																													
RDT&E Articles Qty																																

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EXHIBIT R-2a, RDT&E Project Justification		DATE:							
		February 2006							
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME							
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY	0584, A/CREW PROTECT CLOTHING/DEVIC							
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	4.519	2.834	2.512						
Current BES / President's Budget:	4.328	2.791	2.395						
Total Adjustments	-0.191	-0.043	-0.117						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.056	-0.030							
Congressional Increases									
Economic Assumptions		-0.013							
Miscellaneous Adjustments	-0.135		-0.117						
Subtotal	-0.191	-0.043	-0.117						
Schedule: Not Applicable									
Technical: Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N /		0603216N, AVIATION SURVIVABILITY				0584, A/CREW PROTECT CLOTHING/DEVIC						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Licenses	VARIOUS	VARIOUS				.180	12/1/2005	.180	12/1/2006	Continuing	Continuing	
Primary Hdw Development	VARIOUS	VARIOUS				1.097	3/1/2006	1.070	1/1/2007	Continuing	Continuing	
Systems Eng	VARIOUS	NAWCAD, PATUXENT RIVER MD	22.117	2.968	12/1/2004	.884	12/1/2005	.515	12/1/2006	Continuing	Continuing	
Systems Eng	VARIOUS		13.900								13.900	
SUBTOTAL PRODUCT DEVELOPMENT			36.017	2.968		2.161		1.765		Continuing	Continuing	
Remarks:												
SUPPORT												
Configuration Mgmt	WR	NAWCAD, PATUXENT RIVER MD		.532	1/13/2005						.532	
Configuration Mgmt	Various	Various	3.232								3.232	
SUBTOTAL SUPPORT			3.232	.532							3.764	
Remarks:												
TEST & EVALUATION												
Dev Test & Eval	VARIOUS	NAWCAD, PATUXENT RIVER MD		.818	12/1/2004	.200	12/1/2005	.200	12/1/2006	Continuing	Continuing	
Dev Test & Eval	VARIOUS	VARIOUS	18.240							Continuing	Continuing	
SUBTOTAL TEST & EVALUATION			18.240	.818		.200		.200		Continuing	Continuing	
Remarks:												
MANAGEMENT												
Program Mgmt Sup	WR	NAWCAD, PATUXENT RIVER MD				.410	12/1/2005	.410	12/1/2006	Continuing	Continuing	
Travel	TO	NAVAIR HEADQUARTERS, PAX RIVER, MD	.135	.010	10/1/2004	.020	10/1/2005	.020	10/1/2006	Continuing	Continuing	
SUBTOTAL MANAGEMENT			.135	.010		.430		.430		Continuing	Continuing	
Remarks:												
Total Cost			57.624	4.328		2.791		2.395		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4					PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability										PROJECT NUMBER AND NAME 0584 Aircrew Protective Clothing and Devices													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Program Milestones																												
Agile Laser Eye Protection																												
Unity Magnification Goggle																												
Intensified Unity Mag Goggle																												
Advance Helmet Vision System (AHVS)																												
Crusader																												
Visually Coupled Display (high resolution)																												
Adanced Integrated Life Support System (AILSS)																												
Tactical AILSS (TAILSS)																												
Smart AILSS (SAILSS)																												
Injury Prevention																												
T&E Milestones																												
AHVS laboratory testing																												
ANGEL																												
Advanced Technology Crew Station (ATCS)																												

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006																								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 0591, A/CREW SERV & VUNERAB & SAFET																									
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011																								
W0591 A/CREW SERV & VUNERAB & SAFET	5.850	1.549	1.550	1.590	1.621	1.654	1.691																								
RDT&E Articles Qty	23																														
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems and the Military Flight Operations Quality Assurance (MFOQA). *RDT&E,N test articles include Military Flight Operations Quality Assurance (MFOQA) units.</p> <p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="right">4.592</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td align="center">23</td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> MFOQA: Conduct an MFOQA flight demonstration on multiple fleet platforms (F/A-18, H-60, H-53, T-45, V-22, C-40) that includes: Develop requirements for MFOQA parameter selection and standardization. Develop and refine a concept of operations (CONOPS) for MFOQA in the DON. Develop an implementation plan/acquisition strategy for future fleet-wide introduction of MFOQA. </div> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="right">.055</td> <td align="right">.089</td> <td align="right">.089</td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Technology Test & Evaluation: Integration, laboratory, ground, and flight tests of prototype hardware. Includes ballistic testing of coupons, samples, and production representative hardware. Radio frequency, Infrared, visual, and acoustic signature measurements of components and fully installed systems. Testing of hardware uses surrogate or real threats or threat systems at major range and test facilities. All tests are designed to demonstrate prototype's technology readiness level indicating maturity level and ability to transition to production (though engineering change proposal (ECP) or spiral development). </div>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	4.592			RDT&E Articles Qty	23				FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	.055	.089	.089	RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																												
Accomplishments / Effort / Sub-total Cost	4.592																														
RDT&E Articles Qty	23																														
	FY 2005	FY 2006	FY 2007																												
Accomplishments / Effort / Sub-total Cost	.055	.089	.089																												
RDT&E Articles Qty																															

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY		PROJECT NUMBER AND NAME 0591, A/CREW SERV & VUNERAB & SAFET
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.580	1.119	1.119	
RDT&E Articles Qty				
<p>Technology Design & Development: Design of susceptibility and/or vulnerability reduction prototype hardware. Fabrication and integraton/installation of prototype hardware in mockups, aircraft, test fixtures, or as part of larger subsystems. Prototype hardware includes Common On-Board Inert Gas Generation System (COBIGGS) for transport aircraft, transparent and opaque armors, exhaust suppressors, counter-symmetric threat hardware.</p>				
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.623	.341	.342	
RDT&E Articles Qty				
<p>Technology Requirements: Determine future survivability technology requirements through trade studies that result in program master plans or specific system improvement plans. Data gathering and analysis that determines specific survivability improvements for a platform or platform types. Technology reviews that determine current state of survivability technology development for USN, USMC, US Army, US Air Force, and industry. Trade studies include transport aircraft infrared signature analysis, rotary wing survivability requirements, advanced threat assessments, and methodology improvements. Support the program manager by performing survivability related systems engineering support. Fund travel expenses related to the program.</p>				

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		February 2006	
PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY		PROJECT NUMBER AND NAME 0591, A/CREW SERV & VUNERAB & SAFET	
C. PROGRAM CHANGE SUMMARY			
Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	6.080	1.572	1.601
Current BES / President's Budget:	5.850	1.549	1.550
Total Adjustments	-0.230	-0.023	-0.051
Summary of Adjustments			
Congressional Reductions			
Congressional Rescissions			
Congressional Undistributed Reductions	-0.142	-0.016	
Congressional Increases			
Economic Assumptions		-0.007	
Miscellaneous Adjustments	-0.088		-0.051
Subtotal	-0.230	-0.023	-0.051
Schedule: The Aircraft Survivability, Vulnerability and Safety program has no new starts. Schedule changes are due to a restructure/consolidation of multiple accomplishments reflected on the FY06 President's Budget.			
Technical: N/A			

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EXHIBIT R-2a, RDT&E Project Justification							DATE:	February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY					PROJECT NUMBER AND NAME 0591, A/CREW SERV & VUNERAB & SAFET		
D. OTHER PROGRAM FUNDING SUMMARY:	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete Total Cost
E. ACQUISITION STRATEGY:								
<p>Military Flight Operations Quality Assurance (MFOQA) utilizes existing aircraft hardware, and a combination of existing Commercial Off The Shelf (COTS) and Government Off The Shelf (GOTS) ground analysis tools. A competitive contract will be awarded to meet the increased aircraft recorder requirements for the demonstration platforms. The program will integrate with existing aircraft systems that are currently post-MS III, utilizing existing contract vehicles to add MFOQA capabilities to demonstrate platform systems.</p>								

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA 4			0603216N, AVIATION SURVIVABILITY			0591, A/CREW SERV & VUNERAB & SAFET						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hdw Development	SS-CPFF	VARIOUS	8.606			.775	11/1/2005	.387	12/1/2006	9.791	19.559	19.559
Systems Eng	VARIOUS	VARIOUS	7.766	.912	10/1/2004	.250	11/1/2005	.250	11/1/2006	Continuing	Continuing	
Systems Eng (RB) MFOQA	TBD	NSWC CARDERCK D, WST BETHESDA MD		4.520	12/1/2004						4.520	
SUBTOTAL PRODUCT DEVELOPMENT			16.372	5.432		1.025		.637		Continuing	Continuing	
Remarks:												
SUPPORT												
Development Support, MFOQA	WX	NSWC, CARDEROCK, MD	2.483								2.483	
Software Development, MFOQA	TBD	BOEING, ST. LOUIS, MO	1.012								1.012	
Technical Data	WX	VARIOUS	.279								.279	
Studies & Analyses	CPFF	SURVICE, Inc.	.150			.250	11/1/2005	.185	11/1/2005		.585	.585
SUBTOTAL SUPPORT			3.924			.250		.185			4.359	
Remarks:												
TEST & EVALUATION												
Dev Test & Eval (RB)	WX	NAWCAD, PATUXENT RIVER MD		.198	10/1/2004						.198	
Dev Test & Eval (RB)	WX	VARIOUS										
Dev Test & Eval	WX	VARIOUS	1.922								1.922	
Live Fire Test & Evaluation	WX	NAWCWD, CHINA LAKE CA	.350			.200	11/1/2005	.649	11/1/2006	.700	1.899	
SUBTOTAL TEST & EVALUATION			2.272	.198		.200		.649		.700	4.019	
Remarks:												
MANAGEMENT												
Program Mgmt Sup	VARIOUS	VARIOUS	.120	.200	VARIOUS	.064	VARIOUS	.069	VARIOUS	Continuing	Continuing	
Travel (RB)	TO	NAVAIR HQ, PATUXENT RIVER, MD	.225	.019	10/1/2004	.010	11/1/2005	.010	11/1/2006	Continuing	Continuing	
SUBTOTAL MANAGEMENT			.345	.220		.074		.079		Continuing	Continuing	
Remarks:												
Total Cost			22.913	5.850		1.549		1.550		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																									DATE:			
																									FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY														PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME				
RDT&E, N / BA-4														0603216N Aviation Survivability										0591 Aircraft Survivability, Vulnerability and Safety				
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Program Milestones																												
Technology Requirements																												
Survivability Master Plan Updates																												
Rotary Wing Trade Study																												
IR Analysis Trade Study																												
Asymmetric Threat Evaluations																												
Survivability Methodology Analysis																												
Advanced Fire Protection Program																												
Advanced Fire Protection Test																												
Technology Design & Development																												
COBIGGS System Design																												
Rotary Wing Prototype Hardware																												
Survivability Improvements																												
Technology Test & Evaluation																												
Transport Aircraft IR measurements																												
Advanced Exhaust IR measurements																												
COBIGGS Gnd/Fit Tests																												
Rotary Wing Ballistic Testing																												
Rotary Wing Signature Tests																												
Prototype Hardware Tests																												

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CLASSIFICATION:																																
EXHIBIT R4, Schedule Profile																				MFOQA						DATE: FEBRUARY 2006						
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N /BA-4					PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability										PROJECT NUMBER AND NAME 0591 A/C Survivability, Vulnerability & Safety																	
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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																																
MFOQA Parameter Selection																																
MFOQA Version 1 Release																																
MFOQA Version 2 Release																																
Report																																
Systems Integration																																
Flight Demos																																
CONOPS/Fleet Implementation Plan																																
Production Milestones																																
Deliveries																																

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0592, A/CREW & ORDANCE SAFETY												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
0592 A/CREW & ORDANCE SAFETY	1.533	1.259	1.529	1.563	1.595	1.628	1.662												
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Aircraft and Ordnance Safety Program transitions innovative munitions safety technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.</p>																			
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="center">1.533</td> <td align="center">1.259</td> <td align="center">1.529</td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	1.533	1.259	1.529	RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	1.533	1.259	1.529																
RDT&E Articles Qty																			
<p>INSENSITIVE MUNITIONS *Conduct improved air to air missile propulsion demonstration and testing. Output: baseline Insensitive Munitions (IM) performance of air breathing systems. *Conduct shock/blast barrier protection demonstration and testing. Demonstrate pumice as a sympathetic detonation barrier for weapon shipping containers. Investigate alternative mitigation materials. Output: Design, modeling and demonstration of shock absorbent materials for the protection of weapons and weapon platforms. *Demonstrate improved air launched munitions for force protection and homeland defense. Analysis, Design, Demonstration of an improved Navy IM bomb that will mitigate Sympathetic Detonation and cook-off threats. Output: Demonstrate/determine the IM and safety characteristics of improved air launched munitions. *Develop and validate insensitive munitions solutions to advanced energetic material warheads and rocket motors. Hyperbaric materials, New binding materials, Novel fuses and high energy density materials. Continue Improved Navy IM bomb analysis/design/demo. Output: Design, modeling and demonstration of insensitive munitions solutions to new advanced energetic materials. *Develop and validate insensitive munitions solutions for advanced containment/case/warhead materials. Metal matrix composite materials, High temperature cases, Reactive warheads, Composite cases. Continue evaluating reactive material warheads for IM compliance. Output: Design, modeling and demonstration of insensitive munitions solutions to new advanced containment/case/warhead materials.</p>																			

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY			0592, A/CREW & ORDNANCE SAFETY					
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	1.237	1.278	1.536						
Current BES / President's Budget:	1.533	1.259	1.529						
Total Adjustments	<u>0.296</u>	<u>-0.019</u>	<u>-0.007</u>						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.001	-0.013							
Congressional Increases									
Economic Assumptions		-0.006							
Miscellaneous Adjustments	0.297		-0.007						
Subtotal	<u>0.296</u>	<u>-0.019</u>	<u>-0.007</u>						
Schedule:									
Advanced Energetic Materials and Advanced Containment/Case/Warhead Materials were previously included under Reactive Materials and Improved Navy IM Bombs in previous budget submits but have been broken out separately.									
Technical: N/A									
D. OTHER PROGRAM FUNDING SUMMARY: N/A									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
E. ACQUISITION STRATEGY:									
The Aircraft and Ordnance Safety Project acquisition strategy consists of actions (technology transition) which are intended to assist the improvement of NAVAIR-cognizant munitions. Specific task planning involves close coordination with the program offices, field activities, and the IM and IMAD offices. Primary considerations in planning address windows of opportunity within the overall system procurement/life cycle, including milestone II (E&MD), P3I, and PIP events. Munition system design elements involving IM response risk (existing or anticipated) are analyzed in relation to proven and available IM technologies applicable to improvements in those design elements. When it is established that a system can probably be improved by implementing new technology and a window of opportunity for transition is available, the greatest overall improvement in fleet safety regarding IM response risk is the final deciding factor used to prioritize task selection for funding from limited resources.									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0592, A/CREW & ORDANCE SAFETY						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Systems Eng	WX	NAWCWD, CHINA LAKE CA	19.195	1.533	10/30/2004	1.259	10/30/2005	1.529	10/30/2006	Continuing	Continuing	
SUBTOTAL PRODUCT DEVELOPMENT			19.195	1.533		1.259		1.529		Continuing	Continuing	
Remarks:												
SUPPORT												
SUBTOTAL SUPPORT												
Remarks:												
TEST & EVALUATION												
Developmental Test & Evaluation												
SUBTOTAL TEST & EVALUATION												
Remarks:												
MANAGEMENT												
Travel												
SUBTOTAL MANAGEMENT												
Remarks:												
Total Cost			19.195	1.533		1.259		1.529		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																				DATE:								
																				FEBRUARY 2006								
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME													
RDT&E, N /					0603216N, Aviation Survivability										0592, Aircraf & Ordnance Safety													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Air to Air Missile Propulsion System Demo/Testing:	[REDACTED]																											
Shock/Blast Barrier Protection Modeling and Demo/Testing:	[REDACTED]																											
Improved Air Launched Weapons	[REDACTED]																											
Advanced Energetic Materials	[REDACTED]																											
Advanced Containment/Case/Warhead Materials	[REDACTED]																											

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 1819, CV ACFT FIRE SUPPRESS SYSTEM	
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
1819 A/C PROT	.560	.562	.703	.719	.735	.749	.766
RDT&E Articles Qty							
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops improved fire fighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire fighter training improvements.</p> <p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p>							
	FY 2005	FY 2006	FY 2007				
Accomplishments / Effort / Sub-total Cost	.560	.562	.703				
RDT&E Articles Qty							
<p>Fire Fighting Agents: Evaluate new or modified agents which adequately address changing agent restrictions or technical needs. Objective is to ensure that periodic, but unpredictable, restrictions on agent production or use, primarily driven by the environmental and toxicological fields, do not negatively impact fleet safety.</p> <p>Fire Fighting Systems: Evaluate system automation features and demonstrate enhancements to personnel protection equipment. Objective is to evaluate system hardware for effectiveness against updated fire threats.</p> <p>Fire Fighting Tactics: Evaluate reduced manning impact and resultant modifications to tactics. Provide opportunities for training during agent/system testing. Objective is to maintain emergency capabilities as reductions in manpower draw from available response crews.</p>							

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY			1819, CV ACFT FIRE SUPPRESS SYSTEM					
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	0.583	0.571	0.706						
Current BES / President's Budget:	<u>0.560</u>	<u>0.562</u>	<u>0.703</u>						
Total Adjustments	-0.023	-0.009	-0.003						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions			-0.006						
Congressional Increases									
Economic Assumptions			-0.003						
Miscellaneous Adjustments	-0.023			-0.003					
Subtotal	-0.023	-0.009	-0.003						
Schedule: Not applicable									
Technical: Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9170, MODULAR ADVANCED VISION SYSTEM												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
9170 MODULAR ADVANCED VISION SYSTEM	4.082																		
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This funding will support the shift from traditional CRT based helmet mounted displays to a reflective liquid crystal display using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. The AHVS is composed of two modules. The outer helmet module is a binocular, multi-spectral (day, night, NVG, FLIR) visor projected display. Communications equipment, improved hearing protection, and oxygen mask are mounted to the inner module, which is custom fitted to each aircrew. The inner module (helmet) provides a stable platform upon which mission specific outer modules are attached. Their concept reduces future development cost - designers would begin work from a stable, defined inner helmet platform with common attachment points. Separate helmet development would not be required for any future designs.</p>																			
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td style="text-align: center;">FY 2005</td> <td style="text-align: center;">FY 2006</td> <td style="text-align: center;">FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td style="text-align: center;">4.082</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Modular Advanced Vision System</p> <p>The initial design of the laser projected reflective LCD has been completed. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. Currently the laser source and associated relay optics are being fine tuned to improve manufacturability. Fit studies are assessing portion of the population accommodated by inner module and improving level of sound attenuation provided by hearing protection.</p> </div>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	4.082			RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	4.082																		
RDT&E Articles Qty																			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY			9170, MODULAR ADVANCED VISION SYSTEM					
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	4.160	0.000	0.000						
Current BES / President's Budget:	4.082	0.000	0.000						
Total Adjustments	-0.078	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions									
	-0.079								
Congressional Increases									
	0.001								
Economic Assumptions									
Miscellaneous Adjustments									
	Subtotal	-0.078	0.000	0.000					
Schedule:									
Not Applicable									
Technical:									
Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9173, ROTORCRAFT EXTERNAL AIRBAG
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
9173 ROTORCRAFT EXTERNAL AIRBAG	3.690						
RDT&E Articles Qty							
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This effort will address the level of protection afforded and feasibility of a rotorcraft external airbag, and then to bring the capability to a production ready, aircraft fieldable status. While automotive airbag technology is relatively mature, this unique application will require much larger airbags, aircraft structural integration approach for mounting the airbags in a maintainable manner, and the development of a "predictive" crash sensor. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway.</p>							
B. ACCOMPLISHMENTS / PLANNED PROGRAM:							
	FY 2005	FY 2006	FY 2007				
Accomplishments / Effort / Sub-total Cost	3.690						
RDT&E Articles Qty							
<p>Rotocraft External Airbag</p> <p>Rotocraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors and algorithms. Initial impact studies (water and ground) have already been conducted. Two flight tests of the REAPS system onboard H-53 will be conducted.</p>							

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY			9173, ROTORCRAFT EXTERNAL AIRBAG					
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	3.764	0.000	0.000						
Current BES / President's Budget:	3.690	0.000	0.000						
Total Adjustments	-0.074	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.075								
Congressional Increases	0.001								
Economic Assumptions									
Miscellaneous Adjustments									
Subtotal	-0.074	0.000	0.000						
Schedule:									
Not Applicable									
Technical:									
Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9346, EQUIPMENT LIFE EXTENSION PROGRAM (ELEP)															
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011															
9346 EQUIPMENT LIFE EXTENSION PROGRAM (ELEP)	1.458																					
RDT&E Articles Qty																						
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized. The alternative of modifying and updating aircraft and weapons systems to accept new technologies is cost prohibitive.</p>																						
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> <td></td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="center">1.458</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									FY 2005	FY 2006	FY 2007		Accomplishments / Effort / Sub-total Cost	1.458				RDT&E Articles Qty				
	FY 2005	FY 2006	FY 2007																			
Accomplishments / Effort / Sub-total Cost	1.458																					
RDT&E Articles Qty																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="8"> Equipment Life Extension Program This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized. </td> </tr> </table>								Equipment Life Extension Program This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized.														
Equipment Life Extension Program This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized.																						

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME						PROJECT NUMBER AND NAME		
RD&E, N / BA-4	0603216N, AVIATION SURVIVABILITY						9346, EQUIPMENT LIFE EXTENSION PROGRAM (ELEP)		
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	1.485								
Current BES / President's Budget:	1.458								
Total Adjustments	-0.027	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.027								
Congressional Increases									
Economic Assumptions									
Miscellaneous Adjustments									
Subtotal	-0.027	0.000	0.000						
Schedule: Not Applicable									
Technical: Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY: Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9505, ADVANCED MARITIME TECH CENTER AT PAX RIVER NAS												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
9505 ADVANCED MARITIME TECHNOLOGY CENTER AT	1.835																		
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This effort will establish a technology center to rapidly transition capabilities developed for air to sea environment. In particular, advanced display concepts, helmets, crashworthiness, energy absorbing systems, as well as basic injury component models are directly applicable and needed for fast attack boats and other surface application. Although developed for aircraft the technologies are directly applicable to the harsh surface environment. The resultant capability will establish a capability to rapidly modify and transition critical products.</p> <p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td style="text-align: center;">FY 2005</td> <td style="text-align: center;">FY 2006</td> <td style="text-align: center;">FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td style="text-align: center;">1.835</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Advanced Maritime Technology Center</p> <p>The Advanced Maritime Technology Center will be an engineering facility to modify / optimize effective new aviation and information technologies to port the capability over to small maritime craft for special operations. The key feature in designing small watercraft are mission / crew-centered innovations embodying technology drawn from advances in the areas of display design, crashworthiness, advanced restraint systems, helmet mounted displays , and supporting head / neck injury research.</p> </div>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	1.835			RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	1.835																		
RDT&E Articles Qty																			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 9505, ADVANCED MARITIME TECH CENTER AT PAX RIVER NAS				
C. PROGRAM CHANGE SUMMARY										
Funding:		FY 2005	FY 2006	FY 2007						
Previous President's Budget:		1.882	0.000	0.000						
Current BES / President's Budget:		1.835	0.000	0.000						
Total Adjustments		-0.047	0.000	0.000						
Summary of Adjustments										
Congressional Reductions										
Congressional Rescissions										
Congressional Undistributed Reductions		-0.047								
Congressional Increases										
Economic Assumptions										
Miscellaneous Adjustments										
Subtotal		-0.047	0.000	0.000						
Schedule:										
Not Applicable										
Technical:										
Not Applicable										
D. OTHER PROGRAM FUNDING SUMMARY:		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable										
E. ACQUISITION STRATEGY:										
Not Applicable										

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EXHIBIT R-2a, RDT&E Project Justification							DATE:	February 2006														
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9506, INTEGRATED MANIFOLD & TUBE CERAMIC OXYGEN GEN															
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011															
9506 INTEGRATED MANIFOLD AND TUBE CERAMIC	4.055																					
RDT&E Articles Qty																						
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This effort will begin research that will primarily be devoted to advancing the oxygen generating technology using ceramic membranes. To integrate Ceramic Oxygen Generators (COGS) into an aircraft work will be required to conserve oxygen using pulse dosing breathing regulators, monitoring aircrew via user acceptable sensors and biofeedback technology, and improving real-time oxygen sensing capability.</p>																						
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> <td></td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="center">4.055</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>									FY 2005	FY 2006	FY 2007		Accomplishments / Effort / Sub-total Cost	4.055				RDT&E Articles Qty				
	FY 2005	FY 2006	FY 2007																			
Accomplishments / Effort / Sub-total Cost	4.055																					
RDT&E Articles Qty																						
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td> <p>Integrated Manifold and Tube Ceramic Oxygen Generator</p> <p>This effort will provide funding for a currently unfunded effort to build and flight test a molecular sieve based oxygen concentrator with built in diagnostics and dilution control via external input. The research will focus on advancing the oxygen generating technology using ceramic membranes. To integrate COGS into an aircraft will require a method to conserve oxygen using pulse dosing breathing regulators, monitoring aircrew via user acceptable sensors and biofeedback technology, and improving real-time oxygen sensing capability. An alternative advanced Oxygen Generating Technology will also be pursued to improve fleet oxygen systems as ceramic technology matures.</p> </td> </tr> </table>								<p>Integrated Manifold and Tube Ceramic Oxygen Generator</p> <p>This effort will provide funding for a currently unfunded effort to build and flight test a molecular sieve based oxygen concentrator with built in diagnostics and dilution control via external input. The research will focus on advancing the oxygen generating technology using ceramic membranes. To integrate COGS into an aircraft will require a method to conserve oxygen using pulse dosing breathing regulators, monitoring aircrew via user acceptable sensors and biofeedback technology, and improving real-time oxygen sensing capability. An alternative advanced Oxygen Generating Technology will also be pursued to improve fleet oxygen systems as ceramic technology matures.</p>														
<p>Integrated Manifold and Tube Ceramic Oxygen Generator</p> <p>This effort will provide funding for a currently unfunded effort to build and flight test a molecular sieve based oxygen concentrator with built in diagnostics and dilution control via external input. The research will focus on advancing the oxygen generating technology using ceramic membranes. To integrate COGS into an aircraft will require a method to conserve oxygen using pulse dosing breathing regulators, monitoring aircrew via user acceptable sensors and biofeedback technology, and improving real-time oxygen sensing capability. An alternative advanced Oxygen Generating Technology will also be pursued to improve fleet oxygen systems as ceramic technology matures.</p>																						

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 9506, INTEGRATED MANIFOLD & TUBE CERAMIC OXYGEN GEN				
C. PROGRAM CHANGE SUMMARY										
Funding:		FY 2005	FY 2006	FY 2007						
Previous President's Budget:		4.160	0.000	0.000						
Current BES / President's Budget:		4.055	0.000	0.000						
Total Adjustments		-0.105	0.000	0.000						
Summary of Adjustments										
Congressional Reductions										
Congressional Rescissions										
Congressional Undistributed Reductions		-0.106								
Congressional Increases		0.001								
Economic Assumptions										
Miscellaneous Adjustments										
Subtotal		-0.105	0.000	0.000						
Schedule:										
Not Applicable										
Technical:										
Not Applicable										
D. OTHER PROGRAM FUNDING SUMMARY:		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
E. ACQUISITION STRATEGY:		Not Applicable								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9507, INTELLIGENT AUTONOMY TECH TRANSITION PROGRAM												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
9507 INTELLIGENT AUTONOMY TECHNOLOGY	2.417																		
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This effort will focus on transitioning advancements and COTS technology into Unmanned Systems. The capability will greatly expand DoD's tactical options while safeguarding the warfighter. Physical limits on bandwidth and network connectivity require future devices to have high levels of organic autonomy to support the envisioned scenarios. Core technologies include sensing, data fusion, situational awareness, and intelligent autonomous operations, replanning, systems management and group cooperation. The funding will be used to demonstrate a higher level of Autonomy and Artificial Intelligence for Unmanned Systems to allow them to operate and be accepted in a manned environment. A high level of autonomy is required to achieve manpower reduction goals, data-link bandwidth limitations, and covert operations. The challenge is integrating new technology into existing military unmanned craft and finding a Research and Development/Test and Integration Center to host developmental testing. Autonomous systems are non-deterministic which are very difficult to test/certify. The current effort attempts to break this cycle of cost increases for unmanned systems by developing control algorithms and low cost high bandwidth data links to connect the UAVs to the control systems.</p> <p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td style="text-align: center;">FY 2005</td> <td style="text-align: center;">FY 2006</td> <td style="text-align: center;">FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td style="text-align: center;">2.417</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Intelligent Autonomy Technology Transition</p> <p>A high level of autonomy is required to achieve manpower reduction goals, data-link bandwidth limitations, and covert operations. The challenge is integrating new technology into existing military unmanned craft and finding a Research and Development/Test and Integration Center to host developmental testing. Autonomous systems are non-deterministic which are very difficult to test/certify. The current effort attempts to break this cycle of cost increases for unmanned systems by developing control algorithms and low cost high bandwidth data links to connect to UAV's to the control system.</p> </div>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	2.417			RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	2.417																		
RDT&E Articles Qty																			

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EXHIBIT R-2a, RDT&E Project Justification		DATE:							
		February 2006							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9507, INTELLIGENT AUTONOMY TECH TRANSITION PROGRAM							
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	2.476	0.000	0.000						
Current BES / President's Budget:	2.417	0.000	0.000						
Total Adjustments	-0.059	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.060								
Congressional Increases	0.001								
Economic Assumptions									
Miscellaneous Adjustments									
Subtotal	-0.059	0.000	0.000						
Schedule:									
Not Applicable									
Technical:									
Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9508, INTELLIGENT CONTROL SYSTEM FOR SWARM												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
9508 INTELLIGENT CONTROL SYSTEM FOR SWARM	3.669																		
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This program will develop an intelligent control system for the next generation of UAVs, with particular applicability for the SWARM UAV concept. The developed technology would have the capability for coordinated control of multiple UAVs and have processing capabilities required for responding to threat assessment for chemical, biological and nuclear detection sensors. Technology transfers to industry will be included in the program to establish an industrial base to support Defense applications.</p>																			
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="center">3.669</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	3.669			RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	3.669																		
RDT&E Articles Qty																			
<p>Intelligent Control System for SWARM</p> <p>The ultimate goal is to develop an intelligent control system that will demonstrate autonomous operations and cooperative behavior for persistent surveillance. The objective is to identify, acquire, and integrate, available technologies to develop prototype SWARM UAVs for test and evaluation. Specific tasks include: 1) identifying available components such as airframes, avionics controls, communication software, and sensors suitable for SWARM applications, 2) evaluating existing technologies and determining required enhancements, 3) algorithm and software development to control several vehicles in the air simultaneously, 4) cooperative behavior such that the vehicles positions are simultaneously tracked on the mission plan map.</p>																			

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EXHIBIT R-2a, RDT&E Project Justification		DATE:							
		February 2006							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9508, INTELLIGENT CONTROL SYSTEM FOR SWARM							
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	3.764	0.000	0.000						
Current BES / President's Budget:	3.669	0.000	0.000						
Total Adjustments	-0.095	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions	-0.096								
Congressional Increases	0.001								
Economic Assumptions									
Miscellaneous Adjustments									
Subtotal	-0.095	0.000	0.000						
Schedule:									
Not Applicable									
Technical:									
Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9510, SILVER FOX UAV (NAVAIR)												
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011												
9510 SILVER FOX UAV (NAVAIR)	4.836																		
RDT&E Articles Qty																			
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This effort will further accelerate the development of small, low-cost, unmanned air vehicles for Navy ship operations, marine mammal detection, submarine detection, tactical support for ground troops and special operations forces - including convoy protection perimeter defense. This effort will continue sensor development to optimize field of view, resolution, etc. for the scan search pattern for mine clearing, as well as the integration of the Autonomous Intelligent Network of Systems (AINS) program to support autonomous intelligent networks of UAVs.</p> <p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td></td> <td>FY 2005</td> <td>FY 2006</td> <td>FY 2007</td> </tr> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td align="center">4.836</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Silver Fox UAV</p> <p>Support the assessment of Silver Fox's ability to provide surveillance during mine clearing operations. In particular, search and scan patterns will be assessed and optimized. Key areas of study include determining resolution and field of view of the sensor as function of altitude and mission profile.</p> </div>									FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	4.836			RDT&E Articles Qty			
	FY 2005	FY 2006	FY 2007																
Accomplishments / Effort / Sub-total Cost	4.836																		
RDT&E Articles Qty																			

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME			
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY					9510, SILVER FOX UAV (NAVAIR)			
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	4.952	0.000	0.000						
Current BES / President's Budget:	4.836	0.000	0.000						
Total Adjustments	-0.116	0.000	0.000						
Summary of Adjustments									
Congressional Reductions									
Congressional Rescissions									
Congressional Undistributed Reductions									
Congressional Increases									
Economic Assumptions									
Miscellaneous Adjustments									
	Subtotal	-0.116	0.000	0.000					
Schedule:									
Not Applicable									
Technical:									
Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			38.100					
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>CONGRESSIONAL ADDS</p>								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9170		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.300	
RDT&E Articles Quantity				
Modular Advanced Vision System				
<p>The initial design of the laser projected reflective LCD has been completed. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. Currently the laser source and associated relay optics are being fine tuned to improve manufacturability. Fit studies are assessing portion of the population accommodated by inner module and improving level of sound attenuation provided by hearing protection.</p>				
9173		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.800	
RDT&E Articles Quantity				
Rotorcraft External Airbag Protection				
<p>Rotorcraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors and algorithms. Initial impact studies (water and ground) have already been conducted. Two flight tests of the REAPS system onboard H-53 will be conducted.</p>				
9346		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.350	
RDT&E Articles Quantity				
Equipment Life Extension Project				
<p>This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in house laboratories to maintain, modify, and update existing, non supported systems a significant cost reduction will be realized.</p>				

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9505		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.100	
RDT&E Articles Quantity				
Advanced Maritime Technology Center				
<p>The Advanced Maritime Technology Center will be an engineering facility to modify / optimize effective new aviation and information technologies to port the capability over to small maritime craft for special operations. The key feature in designing small watercraft are mission / crew-centered innovations embodying technology drawn from advances in the areas of display design, crashworthiness, advanced restraint systems, helmet mounted displays , and supporting head / neck injury research.</p>				
9506		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			4.200	
RDT&E Articles Quantity				
Integrated Manifold and Tube Ceramic Oxygen Generator				
<p>This effort will complete a currently unfunded effort to build and flight test a molecular sieve based oxygen concentrator with built in diagnostics and dilution control via external input. The research will focus on advancing the oxygen generating technology using ceramic membranes. To integrate COGS into an aircraft will require a method to conserve oxygen using pulse dosing breathing regulators, monitoring aircrew via user acceptable sensors and biofeedback technology, and improving real-time oxygen sensing capability. An alternative advanced Oxygen Generating Technology will also be pursued to improve fleet oxygen systems as ceramic technology matures. This effort will complete a currently unfunded effort to build and flight test a molecular sieve based oxygen concentrator that has built in diagnostics and dilution control via external input.</p>				
9507		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.500	
RDT&E Articles Quantity				
Intellegent Autonomy Transition Program				
<p>A high level of autonomy is required to achieve manpower reduction goals, data-link bandwidth limitations, and covert operations. The challenge is integrating new technology into existing military unmanned craft and finding a Research and Development/Test and Integration Center to host developmental testing. Autonomous systems are non-deterministic which are very difficult to test/certify. The current effort attempts to break this cycle of cost increases for unmanned systems by developing control algorithms and low cost high bandwidth data links to connect the UAV's to the control system.</p>				

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9508		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			3.700	
RDT&E Articles Quantity				
Intelligent Control Systems for SWARM UAVs				
The ultimate goal is to develop an intelligent control system that will demonstrate autonomous operations and cooperative behavior for persistent surveillance. The objective is to identify, acquire, and integrate, available technologies to develop prototype SWARM UAVs for test and evaluation. Specific tasks include: 1) identifying available components such as airframes, avionics controls, communication software, and sensors suitable for SWARM applications, 2) evaluating existing technologies and determining required enhancements, 3) algorithm and software development to control several vehicles in the air simultaneously, 4) cooperative behavior such that the vehicles positions are simultaneously tracked on the mission plan map.				
9510		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.800	
RDT&E Articles Quantity				
Silver Fox UAV				
Support the assessment of Silver Fox's ability to provide surveillance during mine clearing operations. In particular, search and scan patterns will be assessed and optimized. Key areas of study include determining resolution and field of view of the sensor as function of altitude and mission profile.				
9756		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.000	
RDT&E Articles Quantity				
Agile Laser Eye Protection				
Funding will continue the development of the Unity Magnification Goggle, the first device within DoD tested and shown to provide protection against a frequency agile laser. Current transmittance limits usage to day only. The push will be to integrate night vision cameras using an innovative optical design to allow day / night usage that doesn't reduce day acuity and color perception.				

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9757		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.000	
RDT&E Articles Quantity				
Aviation Fire Suppression Production Alignment				
Congressional Add				
9758		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.750	
RDT&E Articles Quantity				
Ceramic Air-Deployed Sensor				
The ceramic sensor is a highly sensitivity, air borne sensor designed to detect trace materials. Work will focus on optimizing the sensitivity and packaging of sensor / sensor suite.				
9759		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			3.400	
RDT&E Articles Quantity				
Command Chair Active Isolation				
The command Chair is the next generation of Human Machine Interface for Bridge and Tactical Computing. The concept is based on complete integration of isolation, computer, Multi-Layered Displays, controls and secure seating into one structure that will decrease the cost over conventional workstations significantly, while increasing reliability. This new form of operational workstation when combined with a Common Display Open Architecture and next generation visualization will ensure alignment of the technology to meet the emerging requirements of U.S. Navy new ship construction and modernization plans.				

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9760		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			3.500	
RDT&E Articles Quantity				
Kingfisher II Hybrid UAV/USV				
Funding will be used to equip the Kingfisher with the appropriate sensor suite to monitor and resolve real time activity in and around the littorals. Currently, Navy assets (sub and surface) move through restricted waterways without situational awareness of surrounding activity and potential threats. A properly equipped UAV (sensors with necessary resolution and field of view) could provide the required situational awareness to reduce likelihood of threat / injury.				
9761		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.600	
RDT&E Articles Quantity				
Integrated Mission Helmet				
The Integrated Mission Helmet is a two-part helmet designed to provide a common platform across platforms and services. The approach is based on an inner life support module (LSM) and a custom outer helmet specific to a particular mission. The LSM will be sized (2) and fit to the individual to accommodate the population and provide impact , penetration and hearing protection / communications. The common outer modules will be either a rotary wing, tactical or helmet mounted display variant. If successful the Integrated Mission Helmet will reduce the number of helmets in inventory from 26 to 2 inner and 5 -6 outer.				
9762		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			2.100	
RDT&E Articles Quantity				
Operational Experimentation Environment at Pax				
The "Operational Experimentation Environment" will enhance the Distributed Common Ground System-Navy (DCGS-N) Experimentation & Analysis Laboratory (DEAL). Funding will be used to conduct operational experimentation to enhance the interoperability of the DCGS-N system and Naval Aircraft and their associated integration facilities. The DCGS-N Experimentation & DEAL will address Maritime Littoral Intelligence, Surveillance, Reconnaissance & Targeting (ML-ISR&T), and Homeland Defense (HLD), Network Centric Warfare (NCW) mission areas by supporting virtual and live operational experiments to assess prototype technologies and evaluate interoperability requirements.				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9763		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.000	
RDT&E Articles Quantity				
Smart Visor				
The Smart Visor will integrate emerging liquid crystal and or thin film technologies into a visor substrate to improve laser eye protection. The approach is based on a polymeric stack that can be molded into the visor substrate. The second approach that could provide variable attenuation in real time is a spherical liquid crystal visor. Both approaches will provide cost effective broadband, variable density protection.				
		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				
		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 05	FY 06	FY 07	
Previous President's Budget:				
Current BES/President's Budget		<u>38.100</u>		
Total Adjustments	0.000	38.100	0.000	
Summary of Adjustments				
Congressional Reductions				
Congressional Rescissions				
Congressional Undistributed Reductions				
Congressional Increases		38.100		
Economic Assumptions				
Miscellaneous Adjustments				
Subtotal	<u>0.000</u>	<u>38.100</u>	<u>0.000</u>	
Schedule:				
Not Applicable				
Technical:				
Not Applicable				

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4			R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)				
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	41.940	40.841	16.383	41.741	7.883	8.025	8.179
3050 Deployable Joint Command & Control	41.940	40.841	16.383	41.741	7.883	8.025	8.179
Quantity of RDT&E Articles							
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Deployable Joint Command and Control (DJC2) is a SecDef and Chairman, Joint Chiefs of Staff (CJCS) priority DoD transformation initiative that provides a deployable, scalable and tailorable headquarters command and control (C2) capability for each Regional Combatant Commander (RCC), and one maritime variant. It is the materiel solution to Standing Joint Force Headquarters (SJFHQ), a new capability to be implemented at each RCC starting in FY05. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. The DJC2 program addresses both the Quadrennial Defense Review (QDR) finding that a joint command and control architecture needs to be developed for standing Joint Task Forces (JTFs) at each of the RCCs and the need for a deployable Joint Command and Control System described in the Transformation Study Report presented to the Secretary of Defense in April 2001. It integrates lessons learned from U.S. Central Command's deployable headquarters funded from the FY 2001 Emergency Supplemental Act for Recovery from and Response to Terrorist Attacks on the United States. The JCS/Joint Requirement Oversight Council (JROC) has approved the DJC2 Mission Needs Statement (MNS) and Operational Requirements Document (ORD).</p> <p>DJC2 seeks to provide standing, and standardized, joint C2 systems that can be deployed by RCCs or JTFs and the new SJFHQ concept and doctrine being developed by Joint Forces Command in coordination with other RCCs and the Joint Staff, as tasked by Defense Program Guidance (DPG). RCC and JTF commanders will use a deployable joint command and control capability for day-to-day operations, as well as when deployed for training or contingency operations. The capability is intended for all levels of conflict and will be reconfigurable to meet specific RCC and JTF mission requirements. This capability must be interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.</p> <p>DJC2 will utilize Global Command and Control System (GCCS) in its core suite of applications, ensuring interoperability with the worldwide-installed base of GCCS-J.</p>							

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4	R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)	
<p>The RDT&E line supports an evolutionary acquisition strategy. The intent of this strategy is to develop a system based upon a current understanding of joint requirements, rapidly field systems based upon those requirements, analyze operational utilization of the systems, and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. Maximum use will be made of commercial technologies; technology insertion of each DJC2 suite will be made approximately every three years. The baseline Increment I configuration will be based upon existing S&T initiatives, Advanced Concepts Technology Demonstration (ACTD) Programs, programs of record, and fielded capabilities of the services and defense agencies, scaled to the RCC level. The Increment II and subsequent deliveries will include newly developed capabilities based on emergent, joint requirements and operational feedback from utilization of earlier delivered systems, as well as incorporation of new commercial technologies.</p> <p>(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it develops and integrates hardware and software for experimental tests related to specific applications.</p>		

R-1 SHOPPING LIST - Item No. 32

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 2 of 10)

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EXHIBIT R-2, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control	PROJECT NUMBER AND NAME 3050 DJC2

(U) C. PROGRAM CHANGE SUMMARY:

	FY 2005	FY 2006	FY 2007
(U) Funding:			
FY06 President's Budget	41.984	41.464	7.895
FY07 President's Budget	41.940	40.841	16.383
Total Adjustments	-0.044	-0.623	8.488

Summary of Adjustments

Federal Technology Transfer	-0.012		
Department of Energy	-0.032		
SEC. 8125 Reduction		-0.189	
Congressional Action 1% Reduction		-0.434	
Contract Support Reduction			-0.282
NWCF Civpers Efficiencies			-0.118
Program Increase Deployable Joint Command and Control			8.800
CIVPERS Pay raise rate change			0.053
Inflation Adjustment			0.035
Subtotal	-0.044	-0.623	8.488

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 32

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control	PROJECT NUMBER AND NAME 3050 DJC2
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(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	18.166	20.437	4.035
RDT&E Articles Quantity			

FY05- Performed system engineering analysis and integration (SE&I) activities associated with the follow-on increment requirements update and design process. Refined configuration management baselines and Technology Development Plan. Utilized analysis, architectural design, and design review processes to perform detailed design for technologies identified as part of the technology insertion process for Increment I.

FY06 - Begin assessment and detailed planning for follow-on increment and methodology necessary to implement that design into the engineering test bed, as well as the JFCOM, PACOM, and CENTCOM systems. Refine Architecture views necessary to support follow-on Increment Information Support Plan, Cost Documentation, Testing, and Capabilities Production Document. Perform necessary requirements decomposition using Rational Unified Process, driving toward a production level specification. Begin testing and integrating service based architecture, refining knowledge management procedures necessary for incorporation into the GIG-ES. Evaluate and begin transition of hardware toward Internet Protocol 6.0. Identify solution for Multi-Level Security and when chosen, evaluate impact on IT server size and deployability. Determine impact on bandwidth and refinement of data reachback procedures to specified Centers of Excellence, optimizing only handling information once (OHIO). Conduct necessary design reviews to validate proposed design. Continue analysis and architectural design for technologies identified as part of the technology insertion process for Increment I.

FY07- Perform system engineering analysis and integration (SE&I) activities. Conduct analysis and architectural design reviews for enhanced technologies identified as part of the technology insertion process for Increment I.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	7.590	4.396	5.668
RDT&E Articles Quantity			

FY05 - Utilized the initial test facility to support extended development of commercial technologies to develop deployable C2 centers for each of the four RCCs and one maritime platform. Utilized this initial test facility to further refine the requirements for the DJC2 material solution based upon experimentation and Advanced Concepts Technology Demonstration (ACTD) results. Developed and implemented changes in the DJC2 RDT&E test bed based on lessons learned in ACTDs and operations/exercises. Utilized the test bed in realistic military demonstrations, and on that basis, made assessments of the military utility.

FY06-07 - Develop and implement changes in the DJC2 RDT&E test bed based on lessons learned in ACTDs and operations/exercises. Utilize the test bed in realistic military demonstrations, and on that basis, make assessments of the military utility.

R-1 SHOPPING LIST - Item No. 32

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control	PROJECT NUMBER AND NAME 3050 DJC2
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(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.483	3.900	4.250
RDT&E Articles Quantity			

FY05 - Analyzed, prepared, and performed In-Process Review (IPR), and Milestone acquisition activities for Increment II and beyond.
 FY06-07 Continue to analyze, prepare, and perform Milestone B, In-Process Review (IPR), and Milestone C activities for Increment I, II and beyond.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	12.701	10.129	0.000
RDT&E Articles Quantity			

FY05 - Obtained and tested select commercial technology which enhances warfighter capability and, when deemed appropriate, placed on the roadmap for insertion. Validated technical concepts and technologies.
 FY06 - Continue to validate technical concepts and technologies to be recommended for inclusion into the follow-on increments.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	1.979	2.430
RDT&E Articles Quantity			

FY06 - 07 Provide technology refresh and component upgrade for the CONOPS Experimentation System at JFCOM

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control			PROJECT NUMBER AND NAME 3050 DJC2				
(U) D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN BLI 2804	34,809	27,681	0	25,692	0	0	0	Cont.	Cont.
(U) E. ACQUISITION STRATEGY:									
<p>This RDT&E line supports an evolutionary acquisition strategy. The intent of this strategy is to: develop a system based upon a current understanding of joint requirements; rapidly field systems based upon those requirements; analyze operational utilization of the systems; and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. The Increment I configuration will be based upon existing C4I systems, scaled to the Combatant Command level. The follow-on configurations will include newly developed capabilities based on emergent, joint requirements and operational feedback based upon utilization of earlier delivered systems.</p>									
(U) G. METRICS:									
<p>Earned Value Management (EVM) is used for metrics reporting and risk management.</p>									

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA 4			0603237N Deployable Joint Command & Control			3050 DJC2						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development	VAR	NSWC, Crane, USA, & VAR	9.900	3.000	VAR	3.000	VAR	2.430	VAR	Continuing	Continuing	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	VAR	VAR	19.175	6.461	VAR	11.986	VAR	4.035	VAR	Continuing	Continuing	
Training Development												
Engineering Facility Development	WX	NSWC, CSS	13.000	3.590	VAR	7.355	VAR	2.668	VAR	Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal Product Development			42.075	13.051		22.341		9.133		Continuing	Continuing	
Remarks:												
Development Support												
Software Integration	VAR	NSWC, CSS & VAR	17.680	9.469	VAR	8.000	VAR	2.000	VAR	Continuing	Continuing	
Integrated Logistics Support												
Configuration Management												
Technical Investigations	VAR	NTA & VAR	6.309	3.000	VAR	3.000	VAR			Continuing	Continuing	
Trade-off Studies & Analyses	VAR	NTA & VAR	5.000	2.000	VAR	2.000	VAR			Continuing	Continuing	
GFE												
Award Fees												
Subtotal Support			28.989	14.469		13.000		2.000		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA 4			0603237N Deployable Joint Command & Control			3050 DJC2						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MPR	46th Test Wing & VAR	3.000	4.000	VAR			0.500	VAR	Continuing	Continuing	
Operational Test & Evaluation	VAR	OPTEVFOR & VAR	3.500	4.000	VAR			0.500	VAR	Continuing	Continuing	
Live Fire Test & Evaluation												
Test Assets	MPR	Eglin AFB & VAR	1.000	1.000	VAR	1.000	VAR			Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal T&E			7.500	9.000		1.000		1.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VAR	NSWC, CSS & VAR	16.438	5.420	VAR	4.500	VAR	4.250	VAR	Continuing	Continuing	
Travel												
Transportation												
Subtotal Management			16.438	5.420		4.500		4.250		Continuing	Continuing	
Remarks:												
Total Cost			95.002	41.940		40.841		16.383		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile																	DATE: February 2006											
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME													
RDT&E, N / BA 4					0603237N Deployable Joint Command & Control										3050 DJC2													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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																												
<div style="display: flex; justify-content: space-around; width: 100%;"> ▲ △ </div>																												
MILESTONE C																												
<div style="display: flex; justify-content: space-around; width: 100%;"> ▲ △ </div>																												
Test & Evaluation Milestones																												
Development Test																												
<div style="display: flex; justify-content: space-around; width: 100%;"> ▲ △ </div>																												
Operational Test																												
Production Milestones																												
Deliveries																												

R-1 SHOPPING LIST - Item No. 32

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 9 of 10)

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603261N Tactical Airborne Reconnaissance			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		6.383	3.879	3.959	4.158	4.303	4.352	4.402
2467 UAV CONOPS		6.383	3.879	3.959	4.158	4.303	4.352	4.402

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Department of the Navy leadership is committed to Naval Unmanned Aerial Vehicles (UAVs) and to procuring an operational UAV capability as soon as possible. The Naval UAV Strategy employs a family of UAVs to perform tactical, persistent and penetrating Intelligence, Surveillance, and Reconnaissance (ISR) in support of Naval and Joint missions from forward bases/platforms and naval ships.

In support of the Navy's overall UAV strategy, this program develops Concept of Operations (CONOPS) that integrate UAVs into the Chief of Naval Operations (CNO)/Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). By providing fleet input based on current operations with UAVs in a simulated combat environment, this CONOPS development investment is the foundation of how the Carrier Strike Group (CSG) will operate a combined Manned and Unmanned Naval Air Force. Specifically:

- Develops, demonstrates, and evaluates CONOPS, and assesses manning requirements of ship-based tactical UAVs.
- Leverages and assesses joint utility of Global Hawk Maritime Demonstration (GHMD) System.
- Demonstrates UAV integration into USN battlespace dominance operations and network centric warfare.
- Demonstrates UAV integration into USN sensor-to-shooter and Sea Strike.
- Supports development of Joint UAV CONOPS through Intelligence, Surveillance, and Reconnaissance (ISR) Time Sensitive Operations Joint Test and Evaluation (JTE).
- Develops ISR CONOPS in support of strike, Military Operations Other Than War (MOOTW), Anti-Air Warfare (AAW), and Combat Search and Rescue (CSAR).
- Demonstrates UAV cross-cueing capability with theater and strategic intelligence sources.
- Develop Tactics, Techniques, and Procedures for multi- dissimilar UAV control, operations, and data dissemination utilizing NATO STANAG 4586.

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME 2467 UAV CONOPS		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
2467 UAV CONOPS Research		6.383	3.879	3.959	4.158	4.303	4.352
RDT&E Articles Qty- Not Applicable							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

In support of the Navy's overall UAV strategy, this program develops Concept of Operations (CONOPS) that integrate UAVs into CNO/Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). By providing fleet input based on current operations with UAVs in a simulated combat environment, this CONOPS development investment is the foundation of how the Carrier Strike Group will operate a combined Manned and Unmanned Naval Air Force. Specifically:

- Develops, demonstrates, and evaluates CONOPS, and assesses manning requirements of ship-based tactical UAVs.
- Leverages and assesses joint utility of Global Hawk Maritime Demonstration System .
- Demonstrates UAV integration into USN battlespace dominance operations and network centric warfare.
- Demonstrates UAV integration into USN sensor-to-shooter and Sea Strike.
- Supports development of Joint UAV CONOPS through ISR Time Sensitive Operations Joint Test and Evaluation (JTE).
- Develops Intelligence, Surveillance, and Reconnaissance CONOPS in support of strike, Military Operations Other Than War (MOOTW), Anti-Air Warfare (AAW), Combat Search and Rescue (CSAR).
- Demonstrates UAV cross-cueing capability with theater and strategic intelligence sources.
- Develop Tactics, Techniques, and Procedures for multi-dissimilar UAV control, operations, and data dissemination utilizing NATO STANAG 4586.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME 2467 UAV CONOPS
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.150	0.700	0.700
RDT&E Articles Quantity			

Studies and Demonstrations to develop CONOPS for manned-unmanned integration of UAV and aircraft systems.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.300		
RDT&E Articles Quantity			

Completed JTE UAV Support. Joint UAV's (JUAV) in Time Sensitive Operations (TSO) final report and additional documents completed April 2005.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.312	0.950	0.950
RDT&E Articles Quantity			

Develop standards-based NATO STANAG 4586 tool and validation capability to certify interoperability compliance. Conduct CONOPS studies for multiple, dissimilar UAV interoperability.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME 2467 UAV CONOPS
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.276	1.345	1.425
RDT&E Articles Quantity			

Shipboard CONOPS - Conduct CONOPS studies, demonstrations, and exercises for data relay and weapons employment. Assess manning requirements of ship based tactical UAV to identify manpower reduction opportunities.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.345	0.884	0.884
RDT&E Articles Quantity			

Government engineering support, program office travel and contract support services.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME 2467 UAV CONOPS
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	6.386	3.938	3.950
Current BES / President's Budget	6.383	3.879	3.959
Total Adjustments	-0.003	-0.059	0.009

Summary of Adjustments

Congressional Reductions			
Congressional Rescissions			
Congressional Undistributed Reductions	-0.005	-0.041	
Congressional Increases	0.002		
Economic Assumptions		-0.018	0.023
Miscellaneous			-0.014
Subtotal	-0.003	-0.059	0.009

Schedule:

Schedule reflects current planning through FY2011. Resource constraints and higher priorities necessitated the elimination of Desert Rescue activities.

Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME 2467 UAV CONOPS							
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
Not Applicable									
E. ACQUISITION STRATEGY:									
Not Applicable									

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603261N Tactical Airborne Reconnaissance			2467 UAV CONOPS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Shipboard Integration	Various	Various		0.796	02/05	1.045	02/06	1.125	11/06	Continuing	Continuing	
Ship Suitability											0.000	
Systems Engineering Test Tool	WX	NAWCAD, Pax River, MD		0.362	09/05	0.300	02/06	0.300	12/06		0.962	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	1.158		1.345		1.425		Continuing	Continuing	
Remarks:												
Development Support	WX	NSAWC, Fallon, NV	9.671	1.150	12/04	0.550	12/05	0.550	11/06	Continuing	Continuing	
Software Interoperability	C/CPFF	Raytheon, Falls Church, Va		1.450	03/05	0.800	02/06	0.800	12/06	0.000	3.050	3.050
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses	WX	NAWCWD, China Lake, CA				0.150	02/06	0.150	11/06	Continuing	Continuing	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			9.671	2.600		1.500		1.500		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603261N Tactical Airborne Reconnaissance			2467 UAV CONOPS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various		0.300	12/04						0.300	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Interoperability Testing	Various	Various		0.500	12/04	0.150	01/06	0.150	11/06	Continuing	Continuing	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.800		0.150		0.150		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support	Various	Various		1.480	12/04	0.454	11/05	0.454	11/06	Continuing	Continuing	
Program Management Support	Various	Various	0.040	0.257	12/04	0.330	11/05	0.330	11/06	Continuing	Continuing	
Travel	TO	NAVAIR-HQ, Pax River, MD		0.088	12/04	0.100	11/05	0.100	11/06	Continuing	Continuing	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.040	1.825		0.884		0.884		Continuing	Continuing	
Remarks:												
Total Cost			9.711	6.383		3.879		3.959		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile																				DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME																	
RDT&E, N / BA-4					0603261N Tactical Airborne Reconnaissance										2467 UAV CONOPS																	
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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																																
Test & Evaluation Milestones																																
Operational Test (Planning Schedule)																																
Tactics Development and Evaluation																																
					Standards Based Interoperability																											
					Shipboard CONOPS																											

CAG-11, CAG-12, CAG-10, CAG-9 (triangles pointing up)
 UAV/CAS, CVW-XX (triangles pointing up)
 Operational Test (Planning Schedule)

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EXHIBIT R-2 - Item No.

Exhibit R-2, RDTEN Budget Item Justification
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 (Exhibit R-2, page 9 of 12)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification					February 2006		
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /BA-4		PE 0603382N Advanced Combat System Technology					
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	61.474	33.605	12.398	22.591	23.259	23.941	25.909
0324/Advanced Combat System Technology	61.474	29.705	12.398	22.591	23.259	23.941	25.909
9999/Congressional Adds	0.000	3.900	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Combat System Technology line provided engineering studies, real time instrumentation, risk reduction experiments conducted in a distributed computer architecture, radar technology, and Tactical Information Management (TIM) concepts in a computing testbed to mature them as transition candidates for introduction into warfare systems programs of record. It implements the results of system engineering experiments with currently emerging Commercial-Off-the-Shelf (COTS) computer technologies and distributed processing advances to replace the current computing architectures of various IWS programs with an open, distributed architecture. A priority is the design of the flow and display of tactical information through the "detect-control-engage" process to provide decision quality information.

Funding is included to move all Naval systems, family of systems, and programs to Open Architectures and highly integrated system of systems that will function in FORCEnet. This effort will establish DoN policies and governance for Open Architecture (OA) development and migration of all Navy combat system development to an open systems approach. This development effort will identify the business case and return on investment for moving the Navy towards an open systems approach, support the development of open systems technologies, and integrate best practices for open systems development within Naval acquisition. The OA will ensure Navy-wide system architectures are extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, and reuse methodologies. In summary, this funding supports systems engineering required across all Naval systems as they are migrated to function in a joint net centric warfare environment.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	6.012	4.189	1.653
RDT&E Articles Quantity			

OA Enterprise Strategy and Governance – This funding supports the quarterly/semiannual OA EXCOMM executive committee and continued activities of the OA Executive Team (OAET). The OAET is the key governance body that ensures the open systems approach is developed and applied across the Navy in a cohesive and implementable manner. The OAET is the single interface between IWS 7 and the rest of the OA community of interest. Also funds the OAET working groups such as the Business, Communications, Standards, and Architecture working groups. These groups work across Naval domains to ensure architectures will be extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements across platforms in the Joint Net-Centric Environment.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.968	3.529	1.100
RDT&E Articles Quantity			

OA Enterprise Communications and Training –This funding supports the activities to enable the cultural adoption of OA principals and practices through stakeholder management, communications, training, and OA Knowledge Management. Key activities include the development on an enterprise workforce training and education program and establishment of professional curricula (OA modular acquisition and OA systems engineering) with academia and Naval Institutes. This program plan includes participation, liaison, and coordination with multiple stakeholders including the OSD Open Systems Joint Task Force (OSJTF), Net Centric Operations Industry Consortium (NCOIC), FORCEnet, Industry Days, and other communication vehicles, to ensure the optimal OA standards and technologies are identified and incorporated into Naval system acquisition.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	6.562	10.954	4.857
RDT&E Articles Quantity			

OA Program Maturity Development – This funding supports the assessment of systems, family of systems, and programs (ACAT I - IV) to determine the baseline OA maturity and compliance with Modular Open Systems Architecture (MOSA). This includes the identification of cross-domain and enterprise components and analysis of business and technical alternatives to determine return on investment for re-use. The OA Program Maturity Development includes the establishment of mission focused Communities of Interest to provide end-to-end mission based OA compliant capabilities. This includes the OA/FN Experimentation which is an effort to develop an Enterprise level OA-FN demonstration, test and certification testing capability to enable the Naval community to evaluate candidate components for interoperability reuse potential and NII Net-Ready KPP achievement in a timely and more affordable manner. In addition, this effort will assist in aligning the OA and FN activities in a concrete and demonstrable manner oriented to a Build-Assess-Build experimentation process to collect cross-domain reuse feasibility opportunities and potential interoperability metrics for early feedback into the acquisition and engineering process. Participation and contribution of key technical expertise that enables the development of an implementable OA design that incorporates reusable hardware and software and fulfills Net-Centric Warfare, GiG, ForceNet, and other technical requirements, while ensuring the operator's capability needs are always met. Includes the collaborative development of OA design processes, architectures, and other engineering documents between System Commands and PEO's across Naval domains. Key areas of technical expertise included but are not limited to process development, Naval acquisition, information transfer, information management, resource management, information assurance, time synchronization, programming languages, development tools, and displays.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification	February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	9.082	9.841	3.953
RDT&E Articles Quantity			

OA Implementation and Integration across Naval Domains- Continue supporting the integration of OA policy, design guidance, and technologies into specific Naval domains, system commands, and PEOs. Provide for the direct support of programs to implement OA-related processes and technologies within legacy and developmental Naval systems.

OA Business Strategy - Development of an acquisition strategy addressing incentives, intellectual property issues, contracting (integrators vs. primes), and funding alternatives.

OA Test Facility – Study and recommendation of Test & Evaluation facilities and process changes required to support the fielding of OA-based products and systems. Continued participation of key technical expertise that enables OA application portability validation, Program of Record OA migration risk mitigation, OACE technology evaluations, verification of OA with legacy systems (connection with DEP), proof-of-concept for RCIP. Also includes evaluation of Jointly produced software, such as the IABM. Includes development, maintenance, and use of the OA Asset Repository, and configuration management of software within the repository.

OA Standards- Evaluation of domain standards and current commercial standards to identify enterprise OA standards and align domains accordingly (e.g. NESI, OACE). Activities include the development, maintenance, and issuance of enterprise standards and guidance.

OA Technology Bridging - Provides the new front-work required to prepare for tomorrow's OA technologies in support of OA COTS Technology Refresh. Work with Science & Technology (S&T) communities (e.g. DARPA and Office of Naval Research (ONR)) to provide domain specific problems on which to focus S&T investment and validation of candidate technologies against these domain specific performance requirements. Provide engineering quality lessons learned and benchmarking information back to S&T sponsors and technology developers for enhancements. Ensure that emerging technology advances can be inserted at the proper time and pace to enable the management of COTS obsolescence throughout the OA lifecycle via the Technology Refresh Process that meets the Fleet's Technology Insertion cycles.

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<u>EXHIBIT R-2a, RDT&E Budget Item Justification</u>		February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology	
B. Accomplishments/Planned Program (Cont.)			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	36.650	0.000	0.000
RDT&E Articles Quantity			
<p>AEGIS OA Common Components - Builds upon Aegis Open Architecture 3-Spiral plan (Spy, Advanced Display Upgrade, and Weapons Control) to define Combat System level requirements that adhere to OA guidance for commonality (OACE Category-4) across USN combat systems. Design Aegis Weapon System elements to be re-usable across USN combat systems. Provide Requirements, Design, Development and Test performance of Independence Verification and Validation (IV & V).</p>			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.200	1.192	0.835
RDT&E Articles Quantity			
<p>OA Financial, Technical, and Administrative Support Services – Provides support services for OA development in the following areas: Contract financial management, war room operations, Integrated Development Environment (IDE), technical support, OA policy and instruction development, program-related Risk Management and Cost Analysis, and dedicated executive assistant support to government principles. Provides senior engineering architecture expertise. Includes coordination, planning, facility rental, VTC use, and other aspects of meeting support for the OAET, OAET subgroups, and the OA Executive Committee.</p>			

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EXHIBIT R-2, RDT&E Budget Item Justification		February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget:	66.951	30.166	30.753
FY07 President's Budget:	61.474	33.605	12.398
Total Adjustments	<u>-5.477</u>	<u>3.439</u>	<u>-18.355</u>
Summary of Adjustments			
Programmatic change	0.000	0.000	-18.200
Other misc. changes	0.000	0.000	-0.155
Congressional Adds	0.000	3.900	0.000
General provisions	-0.051	-0.461	0.000
SBIR:	-0.891	0.000	0.000
Cancelled Accounts Liabilities	-0.085	0.000	0.000
Above Threshold Reprogramming:	-4.450	0.000	0.000
Subtotal	<u>-5.477</u>	<u>3.439</u>	<u>-18.355</u>
Schedule:			
N/A			
Technical:			
N/A			

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EXHIBIT R-2, RDT&E Budget Item Justification							February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4				PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology					
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604307N/ 1447 (AEGIS Surf Combatant Combat Sys Imp)	136.011	200.743	151.594	95.169	72.118	88.068	87.825	CONT.	831.528
PE 0604755N/ 2178 (Ship Self Defense System)	47.305	39.874	3.534	0.000	0.000	0.000	0.000	0.00	90.713
PE 0603582N/ 0164 (Common Network Integration)	25.000	25.243	25.428	21.550	25.520	0.000	0.000	CONT.	122.741
PE 0603658N/2039 (Cooperative Engagement Capability)	99.618	86.757	53.406	50.458	53.738	57.975	55.171	CONT.	457.123
E. ACQUISITION STRATEGY:									
<p>Risk reduction efforts are lead and coordinated by NSWC/Dahlgren, the Open Architecture (OA) Technical Authority. Open Architecture Technical Guidance documentation is produced and disseminated to the various programs of record for their use in becoming OA compliant. Additionally, an OA Test Facility is provided at NSWC/Dahlgren for hosting early validation efforts by various programs of record in evaluating their progress toward OA compliance. All of these activities are being scaled to support ASN RDA and OPNAV direction to institute Open Architecture at the enterprise level and will be executed in a wide variety of locations.</p>									
F. MAJOR PERFORMERS:									
<p>NSWC/ Dahlgren - Dahlgren, Virginia - Technical Authority for OA Program for PEO IWS NSWC/Crane, Carderock, & ANTEON- Program Management Support NUWC/Newport-OA Domain Support NAVAIR - OA Domain Support Industry: Lockheed Martin, IBM, ANGLE SPAWAR-OA Domain Support MITRE & SEI-FFRDC</p>									

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Exhibit R-3 Cost Analysis (page 1)											February 2006	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603382N Advanced Combat System Technology		0324 Advanced Combat System Technology							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Component Development												
SE/OA Domain Support	SS/CPFF	APL / Baltimore, MD	0.000	0.250		0.250		0.250		0.000	0.000	
Systems Engineering	WX	NSWC / Dahlgren, VA	12.349	16.802	12/04	7.876		2.680		Continuing	Continuing	
Systems Engineering	CPAF	Lockheed Martin, NJ	0.000	25.467	12/04	0.000		0.000				
Systems Engineering	WR	NAWCAD / St. Inigoes, MD	0.000	0.000		0.000		0.000		0.000	0.000	
Systems Engineering	WX	NSWC/CRANE & Carderock	0.000	0.395		0.400		0.360				
Systems Engineering	WX	NSMA Arlington, VA	0.000	2.410		0.000		0.000				
Systems Engineering	WX	Miscellaneous	0.000	0.000		4.572		0.634				
Training Development		ONR	2.301	0.000		0.000		0.000				
OA DOMAIN SUPPORT	WX	NUWC/Newport, Spawar, Navair	0.000	1.838		12.213		4.867				
Award Fees	CPAF	Lockheed Martin, NJ		3.779		0.000		0.000				
Subtotal Product Development			14.650	50.941		25.311		8.791		Continuing	Continuing	
Remarks:												
Development Support											0.000	
Software Development	WX	MITRE,SEI	0.000	0.310		0.450		0.150				
Industry Development	CPAF	IBM, ANGLE	0.000	3.028	11/04	3.028	03/05	1.120	10/06			
Integrated Logistics Support												
Configuration Management												
Technical Data-Academia	WR	NPS-Monterey/DAU	0.000	0.400		0.150		0.105				
Addvisory Engineering Support-SAG	CPAF	Miscellaneous	0.000	0.177	11/05	0.150	03/05	0.000				
Award Fees												
Subtotal Support			0.000	3.915		3.778		1.375		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)											February 2006	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603382N Advanced Comba		0324 Advanced Combat System Technology							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Miscellaneous	0.000							0.000	0.000	
Operational Test & Evaluation	WX	NSWC/DD	0.000	4.618		2.174		1.398				
OA Asset Repository(SBIR Account)	WX	Miscellaneous	0.000	0.800		0.150		0.000				
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	5.418		2.324		1.398		0.000	9.140	
Remarks:												
Contractor Engineering Support			0.000									
Government Engineering Support												
Program Management Support	CPAF	Miscellaneous	0.283	1.200	11/04	1.192	TBD	0.834	TBD	Continuing	Continuing	
Travel												
Labor (Research Personnel)												
SBIR Assessment(Cong Add)						1.000						
Subtotal Management			0.283	1.200		2.192		0.834		Continuing	Continuing	
Remarks:												
Total Cost			14.933	61.474		33.605		12.398		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile													DATE: February 2006																			
APPROPRIATION/BUDGET ACTIVITY/PROGRAM ELEMENT NUMBER AND NAME													PROJECT NUMBER AND NAME																			
RDT&E, N /BA-4													0603382N Advanced Combat System Technology 0324/Advanced Combat System Technology																			
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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																																
OA Technical Stds & Design Guidance Design Reviews				△				△				△				△				△				△				△				△
OA Functional Architecture Design Reviews				△				△				△				△				△				△				△				△
Test & Evaluation Milestones																																
DDX Rel OA Validation Tests				△				△				△				△				△				△				△				△
CG/DDG OA Validation Tests of Spirals			△				△					△				△				△				△				△				△
CG/DDG OA		⑫	LOR	⑥																												
LCS OA Validation Tests																																
CVN/L-CLASS EDM												△				△				△				△				△				△
Production Milestones																																
Deliveries																																

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

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME Project Unit 9999 Name: Congressional Adds : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9796N				
Advanced Combat System Technology	1.000			

Advanced Combat System Technology -This funding will assist the Navy in the development of Open Architecture subsystems and components for rapid incorporation of functionality that immediately addresses current warfighter gaps or deficiencies that may exist within current command and control systems. This development effort will facilitate the transitioning of legacy algorithms and functionality to adhere to OA principles, as well as working with the Office of Naval Research (ONR) and other Federally Funded Research and Development Centers to leverage capabilities being developed through their Science and Technology efforts.

	FY 06			
9797N				
High Pressure Pure Air Generator	1.400			

High Pressure pure air generator development.

	FY 06			
9798N				
Multiview Data Standards	1.500			

Multiview Data Standards for the integrated digital environment -This R&D funding will encourage and accelerate introduction of an advanced data management capability which provides a much finer level of detail for capturing, managing and tracing data across multiple domains of information that will contribute to dramatic reductions in cost and schedule while improving quality and eliminating errors in the design and development of large complex defense systems.

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EXHIBIT R-2, RDT&E Budget Item Justification									DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /						R-1 ITEM NOMENCLATURE 0603502N/Surface and Shallow Water Mine Countermeasure					
COST (\$ in Millions)		Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
			BA-4								
Total PE Cost	892.118		97.892	118.682	130.265	131.401	127.034	194.089	246.993	Continuing	Continuing
Remote Minehunting System / 0260	327.153		17.278	0.000	5.816	0.000	0.000	27.028	33.418	Continuing	Continuing
Mine Counter Measures Mid-Life Upgrades / 1233	73.506		3.359	15.617	20.160	31.179	19.204	3.832	3.884	Continuing	Continuing
Unmanned Underwater Vehicle / 2094	300.966		58.745	53.805	42.224	56.773	60.020	108.618	160.047	Continuing	Continuing
Assault Breaching System / 2131	190.493		15.721	28.777	37.083	36.116	35.367	30.562	29.513	Continuing	Continuing
Low Frequency Broadband / 3102	0.000		0.000	9.702	0.000	0.000	0.000	0.000	0.000	0.000	9.702
SMCM UUV / 3123	0.000		0.000	1.047	11.222	7.333	12.443	24.049	20.131	Continuing	Continuing
Expendable Mine Neutralization System / 4025	0.000		1.825	8.334	13.760	0.000	0.000	0.000	0.000	0.000	23.919
BPAUV / 9513 *	0.000		0.964	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.964
9999 Congressional Add	0.000		0.000	1.400	0.000	0.000	0.000	0.000	0.000	0.000	1.400
Quantity of RDT&E Articles											0.000
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:											
<p>The program provides for developments to combat the threat of known and projected foreign mines against U.S. Naval and merchant shipping in harbors, channels, choke points, sea lines of communications and amphibious and other fleet operating areas. It develops: (1) organic remote minehunting capability for surface platforms; (2) the integration and improvement of systems and support for systems which will detect, localize, classify, and neutralize moored, bottom, and close-tethered mines for use in Mine Countermeasure (MCM) MCM-1 Class, Mine Hunter Coastal (MHC) MHC-51 Class, and other surface ships; (3) systems for neutralizing mines and light obstacles from shallow water, very shallow water, surf zones, and beach landing craft zones in support of amphibious operations; (4) Unmanned Undersea Vehicle (UUV) systems for clandestine mine reconnaissance.</p> <p>* Congressional plus-up of the Surface Navy Integrated Undersea Tactical Technology (SNIUTT) will be used to develop AN/AQS-14, AN/AQS-24 and AN/AQS-20A sensor training module for a LAN-based Surface Network Embedded Analysis and Tactical Trainer (SNEATT).</p> <p>* Congressional plus-up of the Battlespace Preparation Autonomous Undersea Vehicle (BPAUV) is an unmanned system capable of minehunting and oceanographic data gathering. The BPAUV will be launched and recovered from Littoral Combat Ship (LCS) Flight 0. The Congressional plus up supports development of two engineering development systems.</p>											
(U) B. JUSTIFICATION FOR BUDGET ACTIVITY:											
<p>This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental testing related to specific ship or aircraft applications.</p>											

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 0260 Remote Minehunting Systems					
COST (\$ in Millions)	Prior Years Cost		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
Project Cost	327.153		17.278	0.000	5.816	0.000	0.000	27.028	33.418	Continuing	Continuing
RDT&E Articles Qty	2		0	0							2

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

The AN/WLD-1(V)(1), Remote Minehunting System (RMS), consists of a diesel powered semi-submersible Remote Minehunting Vehicle (RMV) that tows a Variable Depth Sensor (VDS, AN/AQS-20A). It also includes shipboard equipment consisting of a command control combat system, launch and recovery system, radio antennas and support equipment. RMS will operate from the DDG-51 Class Flight IIA ships (DDG-91-96) and Littoral Combat Ships (LCS). The system determines the presence or absence of mines to an acceptable level of confidence to enable ships to operate in or avoid specific areas. Future funding will be used to begin development of emerging technologies for incorporation into the AN/WLD-1(V)(1) Remote Minehunting System and Littoral Combat Ship (LCS) Reconfigurable Mission Capabilities (Multi-Mission - MM).

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 2 of 98)

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 0260 Remote Minehunting Systems

(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Product Development			
Accomplishments/Effort/Subtotal Cost	11.275	0.000	5.316
RDT&E Articles Quantity			

FY05 Accomplishments: Complete engineering and fabrication of Engineering Development Models (EDMs) for the RMS. Conduct Functional/Physical Configuration Audit and installation of Data Link Subsystem and Launch and Recovery Subsystem. Milestone C was approved on 1 July 2005 and program was authorized to procure up to three (3) LRIP units in FY05.

FY07: Correct reliability issues.

	FY 05	FY 06	FY 07
Support			
Accomplishments/Effort/Subtotal Cost	3.619	0.000	0.000
RDT&E Articles Quantity			

FY05 Accomplishments: Complete software Design/Code/Test for the RMS. Continue Integrated Logistics Support (ILS) Planning and Integrated Electronic Technical Manual (IETM) Development for RMS. Continue Integration Support for the RMS .

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 0260 Remote Minehunting Systems																	
(U) B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">T&E</th> <th style="width: 15%;"></th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">1.229</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>					T&E		FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		1.229	0.000	0.000	RDT&E Articles Quantity				
T&E		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		1.229	0.000	0.000															
RDT&E Articles Quantity																			
FY05 Accomplishments: Conducted Operational Assessment, SQT-I, and SQT-II.																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Management</th> <th style="width: 15%;"></th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">1.155</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.500</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Management		FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		1.155	0.000	0.500	RDT&E Articles Quantity				
Management		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		1.155	0.000	0.500															
RDT&E Articles Quantity																			
FY05 Accomplishments: Funds provided for COMOPTEVFOR and Program Management Support and Travel.																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">TOTAL</td> <td></td> <td style="text-align: center;">17.278</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">5.816</td> </tr> </table>					TOTAL		17.278	0.000	5.816										
TOTAL		17.278	0.000	5.816															

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	BA-4	R-1 ITEM NOMENCLATURE 0260 Remote Minehunting Systems
(U) C. PROGRAM CHANGE SUMMARY:		
(U) C. PROGRAM CHANGE SUMMARY:	FY 2005	FY 2006
FY06 President's Budget	14.284	0.000
FY07 President's Budget	17.278	0.000
Total Adjustments	2.994	5.816
Summary of Adjustments:		
Inflation	0.000	0.000
Pay Rates	0.000	0.008
Programmatic Changes	2.994	0.000
Subtotal	2.994	5.816
(U) Schedule:		
Conducted System Qualification Test (SQT) II in the 4th quarter FY05. Procurement in place for three (3) Low Rate Initial Production (LRIP) Remote Minehunting Vehicles (RMVs) units under N00024-05-C-6327 and one (1) Variable Depth Sensor (VDS) in FY05. Full rate production will start in FY06.		
(U) Technical:		
Not Applicable		

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 0260 Remote Minehunting Systems
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
P-1 #50 / OPN									
RMS	33.851	53.708	16.773						
Support	1.710	1.581	1.221						
Total	35.561	55.289	17.994						
 (U) RDT&E, Line 0604373, 0529	 2.400	 3.369	 10.965						

(U) E. ACQUISITION STRATEGY:

The Navy has implemented an evolutionary strategy in developing AN/WLD-1(V)(1). The Navy developed the RMS(V)1/2, as a concept demonstration prototype. The follow-on effort for the RMS(V)3 focused on a prototype development, and was competitively awarded to Lockheed Martin in August 1996. The RMS(V)4, officially designated the AN/WLD-1(V)(1), is based upon RMS(V)3 design and was awarded as a sole source contract to Lockheed Martin in 2002. AN/WLD-1(V)(1) was approved for MS C on 1 July 2005. The program was authorized to procure up to three (3) LRIPs in FY05. A sole source letter contract N00024-05-C-6327 was awarded to Lockheed Martin on 30 September 2005 for FY05 LRIP, and FY06 and FY07 production. Full rate production decision is scheduled for 2nd quarter FY06. FY08 and out-year procurements will be procured under a competitive contract.

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			0260 Remote Minehunting Systems								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPIF	Lockheed Martin	18.470									0.000	18.470	
Developmental Test & Evaluation	CPIF	Lockheed Martin	13.620			0.590	11/04					Continuing	Continuing	
Developmental Test & Evaluation	WX	NSWC, Panama City, FL	7.525			0.639	10/04					Continuing	Continuing	
Subtotal T&E			39.615			1.229		0.000		0.000		Continuing	Continuing	
Remarks:														
Contractor Engineering Support	CPIF	Lockheed Martin	2.919			0.780	11/04			0.300	11/06	Continuing	Continuing	
Government Engineering Support	WX	NSWC, Panama City, FL	22.393							0.100	11/06	Continuing	Continuing	
Program Management Support	CPFF	CACI	4.020			0.288	11/04			0.050	11/06	Continuing	Continuing	
Travel	Various	NAVSEA	0.351			0.087	Various			0.050	11/06	Continuing	Continuing	
SBIR Assessment	Various	Various	6.361											
Subtotal Management			36.044			1.155		0.000		0.500		Continuing	Continuing	
Remarks: Award dates for management are various because multiple activities are receiving tasks at different times during the fiscal year.														
Total Cost			327.153			17.278		0.000		5.816		Continuing	Continuing	
Remarks:														

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 9 of 98)

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CLASSIFICATION:

EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 0260 Remote Minehunting Systems
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AN/WLD-1(V)(1) PROGRAM SCHEDULE

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
Milestones			▲							△	△																	
Events			MS C/LRIP							FRPD																		
Production Readiness Review																												
Production Options																												
Production Competitive CA																												
Contract (N00024-02-C-6309)								EDM																				
Contract (N00024-05-C-6327)																												
Contract (N00024-08-C-TBD)																												
Deliveries																												
N75 Deliveries																												
N76 Deliveries																												
Test & Evaluation																												
Operations and Maintenance Support																												

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 10 of 98)

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&BA-4	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM			PROJECT NUMBER AND NAME 0260 Remote Minehunting Systems				
Schedule Profile: AN/WLD-1(V)(1)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Milestones:								
MC C/LRIP		3Q		1Q				
FRPD				3Q				
IOC				4Q				
Events:								
Production Readiness Review			4Q					
Production Options				1Q-3Q				
Production Competitive CA					2Q			
Contract (N00024-02-C-6309):								
EDM		1Q-4Q	1Q - 2Q					
Contract (N00024-05-C-6327):								
LRIP		4Q	1Q-4Q	1Q-4Q	1Q			
LRIP Options			4Q	1Q-4Q	1Q-4Q			
Production Option				3Q	1Q-4Q	1Q-4Q	1Q-4Q	
Contract (N00024-08-C-TBD):								
Competitive Production Contract					2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Deliveries:								
N75 Deliveries			4Q	1Q-3Q				
N76 Deliveries				2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Test & Evaluation:								
OA		3Q						
SQT-II		4Q						
DT/OT				1Q				
Operations and Maintenance Support			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 11 of 98)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades					
COST (\$ in Millions)		Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
Project Cost		73.506	3.359	15.617	20.160	31.179	19.204	3.832	3.884	Continuing	Continuing
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(1) High-Frequency, Wide Band (HFWB) is a technology upgrade to the SQQ-32 Towed Body which will incorporate HFWB technology into the detection sonar to address performance deficiencies against new mine threats in the littorals. This upgrade will be installed on MCM-1 Class ships with the SQQ-32(V)3 and will develop new transducer modules, fiber optic cable and modify topside processing and display software. 2) Mine Warfare and Environmental Decision Aids Library (MEDAL) is a software segment on the Global Command and Control System – Maritime (GCCS-M). MEDAL provides mine and mine warfare planning and evaluation tools and databases to the MCM Commander. 3) MCM Command Control, Communication, Computers and Intelligence (C4I) meet FORCENet implementation standards; develop and maintain Mine Warfare (MIW) C4I Surveillance and Reconnaissance (C4ISR) architecture; identify and validate C4ISR shortfalls. 4) Develop and implement Course of Action Planner (COAP). 5) Battle Space Profiler (BSP) is used to optimize sonar setup (towed body depth and depression/elevation (D/E) angles), support mission planning based on predicted sonar performance, and adapt mission planning to changes in the environment and threats. Improvement to the BSP system will allow the BSP to become an in situation real time environmental data collection system and will allow sharing pertinent data such as MEDAL contact and environmental databases, as well as all Navigation information. 6) Unmanned Submersible Vehicle (USV) Sweep System is a magnetic/acoustic sweep system developed to sweep acoustic/magnetic influence mines from a small unmanned surface platform deployed from the Littoral Combat Ship (LCS).</p>											

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades		
(U) B. Accomplishments/Planned Program				
BSP / Product Development		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	1.129	0.341
RDT&E Articles Quantity				
Develop NAVO and NRL products into an integrated Battle Space Profiler System.				
BSP / Support		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.110	0.050
RDT&E Articles Quantity				
Develop logistics products, including training materials and interactive technical manual.				
BSP / Management		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.320	0.106
RDT&E Articles Quantity				
Management: Provide program management support and travel for BSP program.				
BSP TOTAL		0.000	1.559	0.497

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades
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(U) B. Accomplishments/Planned Program

C4I / Product Development		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.465	0.703	0.708
RDT&E Articles Quantity				

Product Development:
Continue MIW information system engineering effort. This effort to include the ongoing development of the MIW C4ISR Architecture, which documents the Information Exchange Requirements of the MIW community and serves as Architecture for all MIW Programs of Record as required by DODI 5000.2. Rev 2 Architecture. Rev 3 Architecture. Rev 4 Architecture.

C4I / Support		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.350	0.300	0.400
RDT&E Articles Quantity				

Support:
Identification of C4ISR shortfalls within the MIW community and analysis of potential solutions are accomplished through membership on the FORCEnet Requirements and Architecture Working Groups. System Engineering Support is also provided to the SMCM Class identifying class issues and seeking engineering solutions. The MIW Architecture is utilized to conduct assessments in order to identify shortfalls and provide C4ISR solutions to the MIW community. Specific ongoing initiatives include the continued MIW C4ISR assessment, MCM/MHC LAN improvement program, continued MEDAL/Tactical Environmental Data Services (TEDS) integration, and the integration of MIW tactical databases into the Global Enterprise Systems.

C4I / Management		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.182	0.153	0.223
RDT&E Articles Quantity				

Management:
Provide program management support and travel for MIW C4I program.

C4I TOTAL		0.997	1.156	1.331
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades

(U) B. Accomplishments/Planned Program

COAP / Product Development		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.868	0.852
RDT&E Articles Quantity				

Product Development:
 Begin the development and design of Build 0. Continue testing and delivery of Build 0. Begin development and design of Build 1. Continue the development and design of Build 1. Continue testing and delivery of Build 1. Begin development and design of Build 2.

COAP / Support		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.110	0.110
RDT&E Articles Quantity				

Support:
 Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness in reducing the complexity of the MCM planning problem into a manageable set of options depending on the operational objective. Support effort to include communication with activities such as ONR and NSWC-PC to coordinate the incorporation of validated algorithms and models into MEDAL with the Commander's Estimate of the Situation framework in order to effectively simplify the MCM planning problem for CSG and ESG staffs and therefore provide the speed, agility, adaptability, and flexibility required for modern MCM operations.

COAP / Management		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.094	0.080
RDT&E Articles Quantity				

Management:
 Provide program management support and travel for Course Of Action Planner program. Program management shall include overall technical guidance and leadership for the program. Other ongoing PM support includes oversight of financial and logistics efforts and adequate coordination with MEDAL. Other PM tasking to include briefings, demonstrations, and project planning as required.

COAP TOTAL		0.000	1.072	1.042
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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades
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(U) B. Accomplishments/Planned Program

GCCS-M4X / Product Development	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.468	0.000
RDT&E Articles Quantity			

Product Development:

Developed and integrated GCCS-M 4.x hardware for M-class ships and expeditionary units. This effort includes the identification, approval, design, planning, programming, budgeting and accomplishment of improvements that increase the ability of the MIW ships to perform assigned missions. This is the first step in a larger plan to upgrade the MCM and MHC Class ships to the full IT-21 suite by rapidly inserting the minimum components enabling the MCM fleet to maximize operational effectiveness and minimize associated risk for own force and supported joint forces.

GCCS TOTAL	0.000	0.468	0.000
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades		
(U) B. Accomplishments/Planned Program				
HFWB / Product Development				
Accomplishments/Effort/Subtotal Cost		FY 05 0.000	FY 06 5.335	FY 07 5.432
RDT&E Articles Quantity				
Begin Design and fabrication of transducer and associated electronics; Integration of fiber optic tow cable; Design and selection of shipboard COTS processing and operator console components. Continue design and fabrication efforts; Begin laboratory integration, testing and in-water component tests.				
HFWB / Support				
Accomplishments/Effort/Subtotal Cost		FY 05 0.000	FY 06 2.467	FY 07 2.400
RDT&E Articles Quantity				
Develop beamforming and display software; Modify existing software and integration of new software; Integrated Logistic Support (ILS): Develop Initial Capabilities Documents (ICDs), installation packages, technical manual and training updates. Continue software development and integration; Integrated Logistic Support (ILS): Continue ILS efforts.				
HFWB / T&E				
Accomplishments/Effort/Subtotal Cost		FY 05 0.000	FY 06 0.175	FY 07 0.725
RDT&E Articles Quantity				
Conduct component and development Environmental Qualification Testing (EQT).				
HFWB / Management				
Accomplishments/Effort/Subtotal Cost		FY 05 0.000	FY 06 0.812	FY 07 0.974
RDT&E Articles Quantity				
Management: Provide program management support and travel for High Frequency Wideband program.				
HFWB TOTAL				
		0.000	8.789	9.531

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades

(U) B. Accomplishments/Planned Program

MEDAL / Support	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.987	2.112	5.043
RDT&E Articles Quantity			

Support:

For all MEDAL software development, new functions shall be incorporated through the execution of an evolutionary development process. These functions shall be in accordance with the prioritized fleet requirements and the MEDAL Program Plan. Test of Build 9; complete IOC Build 9, complete development and test of Build 10, Initiate development of Build 11. Test of Build 10, complete IOC Build 10, complete development and test of Build 11, Initiate development of Build 12. Test of Build 11, complete IOC Build 11, complete development and test of Build 12, Initiate development of Build 13. Test of Build 12, complete IOC Build 12, complete development and test of Build 13, Initiate development of Build 14.

MEDAL / Management	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.375	0.461	0.914
RDT&E Articles Quantity			

Management:

Provide program management support and travel for MEDAL program. Program management shall include overall technical guidance and leadership for the program. Other ongoing PM support includes oversight of financial and logistics efforts and coordination with Navy and other DoD organizations and contractors as required to ensure successful execution of the program. As part of the systems engineering element of PM, communicate and coordinate with MIW C4ISR, ICWS, Organic MCM, Mainstreaming MIW, Expeditionary Warfare C4ISR, tactics development, long term planning, Naval Special Clearance Team (NSCT)-1, and other programs as they relate to MEDAL and MIW Mission Planning, Evaluation, and C4ISR. Other PM tasking to include briefings, demonstrations, and project planning as required.

MEDAL TOTAL	2.362	2.573	5.957
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades		
(U) B. Accomplishments/Planned Program				
USV / Product Development		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	1.500
RDT&E Articles Quantity				
Hardware and Software Development of magnetic/acoustic sweep system for small unmanned surface platform .				
USV / Support		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity				
Logistics and integration Support for Boat Platform and Host Platform/LCS.				
USV / T&E		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity				
Risk Reduction Testing/ CT/DT/OT Planning.				
USV / Management		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.302
RDT&E Articles Quantity				
Program Management/Travel/TDA Costs.				
USV TOTAL		0.000	0.000	1.802

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006																																				
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4		R-1 ITEM NOMENCLATURE 1233 Mine Counter Measures Mid-Life Upgrades																																				
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">(U) C. PROGRAM CHANGE SUMMARY:</th> <th style="text-align: right; padding: 5px;">FY 2005</th> <th style="text-align: right; padding: 5px;">FY 2006</th> <th style="text-align: right; padding: 5px;">FY 2007</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">FY06 President's Budget</td> <td style="text-align: right; padding: 5px;">3.813</td> <td style="text-align: right; padding: 5px;">15.855</td> <td style="text-align: right; padding: 5px;">19.513</td> </tr> <tr> <td style="padding: 5px;">FY07 President's Budget</td> <td style="text-align: right; padding: 5px;">3.359</td> <td style="text-align: right; padding: 5px;">15.617</td> <td style="text-align: right; padding: 5px;">20.160</td> </tr> <tr> <td style="padding: 5px;">Total Adjustments</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.454</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.238</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.647</td> </tr> <tr> <td colspan="4" style="padding: 5px;">Summary of Adjustments:</td> </tr> <tr> <td style="padding: 5px;">Inflation</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.103</td> </tr> <tr> <td style="padding: 5px;">Pay Rates</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.029</td> </tr> <tr> <td style="padding: 5px;">Programmatic Changes</td> <td style="text-align: right; padding: 5px;">-0.454</td> <td style="text-align: right; padding: 5px;">-0.238</td> <td style="text-align: right; padding: 5px;">0.515</td> </tr> <tr> <td style="padding: 5px;">Subtotal</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.454</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.238</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.647</td> </tr> </tbody> </table> <p style="padding: 10px 0 0 20px;">(U) Schedule: Funding provides increase infrastructure within MEDAL which supports increased functionality. Current MEDAL schedule will be followed.</p> <p style="padding: 10px 0 0 20px;">(U) Technical: MEDAL Data Fusion will provide additional capability within MEDAL to automate process of fusing contacts with consistent results and less time. Course of Action Planner (COAP) will provide a set of tools which utilizes the Commander's Estimate of the Situation (CES) framework. COAP works within MEDAL to support MIW decision making.</p>			(U) C. PROGRAM CHANGE SUMMARY:	FY 2005	FY 2006	FY 2007	FY06 President's Budget	3.813	15.855	19.513	FY07 President's Budget	3.359	15.617	20.160	Total Adjustments	-0.454	-0.238	0.647	Summary of Adjustments:				Inflation	0.000	0.000	0.103	Pay Rates	0.000	0.000	0.029	Programmatic Changes	-0.454	-0.238	0.515	Subtotal	-0.454	-0.238	0.647
(U) C. PROGRAM CHANGE SUMMARY:	FY 2005	FY 2006	FY 2007																																			
FY06 President's Budget	3.813	15.855	19.513																																			
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades				
(U) D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
2622 / OPN (LV075/LV078/LV080)	14.561	23.876	21.876						
SUPPORT	1.167	1.395	1.631						
TOTAL	15.728	25.271	23.507						
(U) E. ACQUISITION STRATEGY:									
<p>HFWB - NSWC, Panama City will team with a university laboratory to design and develop the HFWB upgrade to the AN/SQQ-32. Contract award for Integration Contractor.</p> <p>BSP - The system is being developed by NAVO, NRL and Naval Surface Warfare Center Panama City. The improvements being incorporated into the BSP system are modifications to existing Naval Oceanographic Office and NRL products</p> <p>Mine Warfare and Environmental Decision Aids Library (MEDAL) - requirements for MEDAL Builds are generated through a formal requirements process. Requirements conferences gather a list of candidate functions based on a logical sequence to fully implement the overall software architecture. The fleet is presented with a recommended list of candidate capabilities based on this program plan, doctrine, fleet comments, and technology. These capability items are then prioritized by the fleet representatives (coordinated by Commander Mine Warfare Command). The fleet inputs are then consolidated by COMINWARCOM into an overall list which is then presented to Navy leadership for pricing and final selection. The selection is based on price, risk, available funding, and possibly by other program factors (e.g., ensure that MEDAL supports other program delivery schedules). Selection balances immediate needs, long term objectives, technical maturity and other programmatic factors. A verification and validation process is applied to any algorithms, tactics, or models to be incorporated in the software. MEDAL development to include integration of data fusion techniques and incorporation of Data Access Layer (DAL) architecture to meet FORCEnet requirements. Acquisition strategy for Course of Action Planner (COAP) is to deliver the software module within MEDAL builds by implementing the Commander's Estimate of the Situation framework into the MEDAL software.</p> <p>USV- The Unmanned Surface Vehicle sweep system effort will be transferred from ONR to PMS495 in FY07. PMS495 will award an SD+D contract to continue development of the system. It will be capable of sweeping mines in the littoral waters. The SD+D phase will be followed by milestone C LRIP decision and then LRIP and full rate production.</p>									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDTE&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
(BSP) Develop Bottom Sediment Cla	WX	NRL	0.000					0.380	10/05	0.024	10/06	Continuing	Continuing	
(BSP) Develop Current Profiler	CPIF	NAVO	0.000					0.217	10/05	0.091	10/06	Continuing	Continuing	N/A
(BSP) Develop Hydro-Optics Packag	WX	NAVO	0.000					0.200	10/05			0.000	0.200	
Systems Engineering	Various	NSWC, PC/NAVAIR						0.100	11/05	0.066	11/06	Continuing	Continuing	
(BSP) System Integration	WX	NSWC, Panama City, FL	0.000					0.232		0.160	11/06	Continuing	Continuing	
Subtotal Product Development			0.000			0.000		1.129		0.341		0.000	1.470	
Remarks:														
(BSP) Develop Logistics Products	WX	NSWC, Panama City, FL	0.000					0.110	10/05	0.050	11/06	Continuing	Continuing	N/A
Subtotal Support			0.000			0.000		0.110		0.050		0.000	0.160	
Remarks:														
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Program Mangement Support	CPFF	CACI						0.050	10/05	0.030	10/06	Continuing	Continuing	N/A
Travel	Various	NAVSEA	0.000					0.080		0.020		Continuing	Continuing	
Government Engineering Support	WX	NSWC, Panama City, FL						0.190		0.056		Continuing	Continuing	N/A
Subtotal Management			0.000			0.000		0.320		0.106		0.000	0.426	
Remarks:														
BSP TOTAL			0.000			0.000		1.559		0.497		0.000	2.056	

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	NSWC, PC/NAVAIR	0.348			0.465	11/04	0.703	11/05	0.708	11/06	Continuing	Continuing	N/A
Subtotal Product Development			0.348			0.465		0.703		0.708		0.000	2.224	
Remarks:														
Software Development	WX	NSWC, Panama City, FL	0.302									0.000	0.302	N/A
Software Development	SS/FFP	SAIC				0.350	11/04	0.300	11/05	0.400	11/06	Continuing	Continuing	
Subtotal Support			0.302			0.350		0.300		0.400		0.000	1.352	
Remarks:														
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Program Management Support	CPFF	CACI	0.110			0.058	11/04	0.050	10/05	0.045	10/06	Continuing	Continuing	N/A
Travel			0.039			0.035	11/04					Continuing	Continuing	
Government Engineering Support	WX	NSWC, Panama City, FL						0.103	10/05	0.178	10/06	0.000	0.281	
Program Management Support	Various	NAVSEA	0.068			0.089	11/04					Continuing	Continuing	N/A
SBIR Assessment			0.019									0.000	0.000	N/A
Subtotal Management			0.236			0.182		0.153		0.223		0.000	0.794	
Remarks:														
C4I TOTAL			0.886			0.997		1.156		1.331		0.000	4.370	

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	NSWC, PC/NAVAIR	0.000					0.868	11/05	0.852	11/06	Continuing	Continuing	N/A
Subtotal Product Development			0.000			0.000		0.868		0.852		0.000	1.720	
Remarks:														
Software Development	SS/FFP	SAIC						0.110	11/05	0.110	11/06	Continuing	Continuing	N/A
Subtotal Support			0.000			0.000		0.110		0.110		0.000	0.220	
Remarks:														
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Program Management Support	CPFF	CACI						0.045	10/05	0.050	10/06	Continuing	Continuing	N/A
Travel								0.005	10/05	0.005	10/06	Continuing	Continuing	
Government Engineering Support	WX	NSWC, Panama City, FL						0.044	10/05	0.025	10/06	Continuing	Continuing	N/A
Subtotal Management			0.000			0.000		0.094		0.080		0.000	0.174	
Remarks:														
COAP TOTAL			0.000			0.000		1.072		1.042		0.000	2.114	

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM				1233 Mine Counter Measures Mid-Life Upgrades							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	Various	NSWC, PC/NAVAIR						0.468	11/05			0.000	0.468	N/A
Subtotal Product Development			0.000			0.000		0.468		0.000		0.000	0.468	
Remarks:														
														N/A
Subtotal Support			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
														N/A
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
														N/A
Subtotal Management			0.000			0.000		0.000		0.000		0.000	0.000	N/A
Remarks:														
														N/A
GCCS TOTAL			0.000			0.000		0.468		0.000		0.000	0.468	

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	ARL:UT						3.410	11/05	3.750	11/06	Continuing	Continuing	
Ancillary Hardware Development	TBD	Contractor (TBD)						0.650	03/06	1.107	11/06	Continuing	Continuing	N/A
Tow Cable Development	WX	NSWC, Panama City, FL						0.850	10/05	0.330	10/06	Continuing	Continuing	
Ship Integration	WX	NSWC, Panama City, FL						0.425	10/05	0.245	10/06	Continuing	Continuing	
Subtotal Product Development			0.000			0.000		5.335		5.432		0.000	10.767	
Remarks:														
(HFWB) Software Development	WX	ARL:UT; NSWC:PC						1.617	11/05	1.400	11/06	Continuing	Continuing	N/A
(HFWB) Integrated Logistics Support	WX	NSWC, Panama City, FL						0.850	10/05	1.000	10/06	Continuing	Continuing	
Subtotal Support			0.000			0.000		2.467		2.400		0.000	4.867	
Remarks:														
Developmental Test & Evaluation	WX	NSWC:PC, ARL:UT						0.175	11/05	0.725	11/06	Continuing	Continuing	
Subtotal T&E			0.000			0.000		0.175		0.725		0.000	0.900	
Remarks:														
Program Management Support	Various	NAVSEA						0.662	10/05	0.774	10/06	Continuing	Continuing	N/A
Travel	PD	Various												
Government Engineering Support	WX	NSWC, Panama City, FL						0.150	10/05	0.200	10/06	Continuing	0.350	N/A
Subtotal Management			0.000			0.000		0.812		0.974		0.000	1.786	
Remarks:														
HFWB TOTAL			0.000			0.000		8.789		9.531		0.000	18.320	

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RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
														N/A
Subtotal Product Development			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Software Development	SS/FFP	SAIC	2.084			1.987	11/04	2.112	11/05	5.043	11/06	Continuing	Continuing	N/A
Software Development	WX	NSWC, Panama, City, FL	0.221									Continuing	Continuing	
Subtotal Support			2.305			1.987		2.112		5.043		0.000	11.447	
Remarks:														
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Program Management Support	CPFF	CACI	0.196			0.094	11/04	0.150	10/05	0.245	10/06	Continuing	Continuing	N/A
Travel			0.061			0.063	11/04	0.015	10/05			Continuing	Continuing	
SBIR Assessment			0.054									0.000	0.054	
Government Engineering Support	WX	NSWC, Panama, City, FL						0.296	10/05	0.669	10/06	Continuing	Continuing	
Program Management Support	Various	NAVSEA	0.132			0.218	11/04					0.218	0.350	N/A
Subtotal Management			0.443			0.375		0.461		0.914		0.218	2.411	
Remarks:														
MEDAL TOTAL			2.748			2.362		2.573		5.957		0.218	13.858	

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RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			1233 Mine Counter Measures Mid-Life Upgrades								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD								0.900	03/07	Continuing	Continuing	
Primary Hardware Development	WX/RCP	NSWC, Panama City, FL								0.600		Continuing	Continuing	N/A
Subtotal Product Development			0.000			0.000		0.000		1.500		0.000	1.500	
Remarks: All work contracted to Raytheon on the CPIF contract was transferred to Lockheed Martin FP contract and NSWC, CSS Panama City, Florida.														
Logistics Support and Integration	Various	TBD								0.000		Continuing	Continuing	N/A
Subtotal Support			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Subtotal Support			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Contractor Engineering Support	CPIF	TBD								0.135	11/06	Continuing	Continuing	N/A
Government Engineering Support	WX	NSWC, Panama City, FL								0.137		Continuing	Continuing	N/A
Travel		NAVSEA								0.030		Continuing	Continuing	N/A
Subtotal Support			0.000			0.000		0.000		0.302		0.000	0.302	
Remarks:														
USV TOTAL			0.000			0.000		0.000		1.802		0.000	1.802	

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EXHIBIT R-4, Schedule Profile		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades

BSP PROGRAM SCHEDULE

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
HW/SW Design and Development																												
Preliminary Design Review							△																					
Critical Design Review								△																				
Env., Shock, & Safety Testing																												
EDM Installation & C/O											△																	

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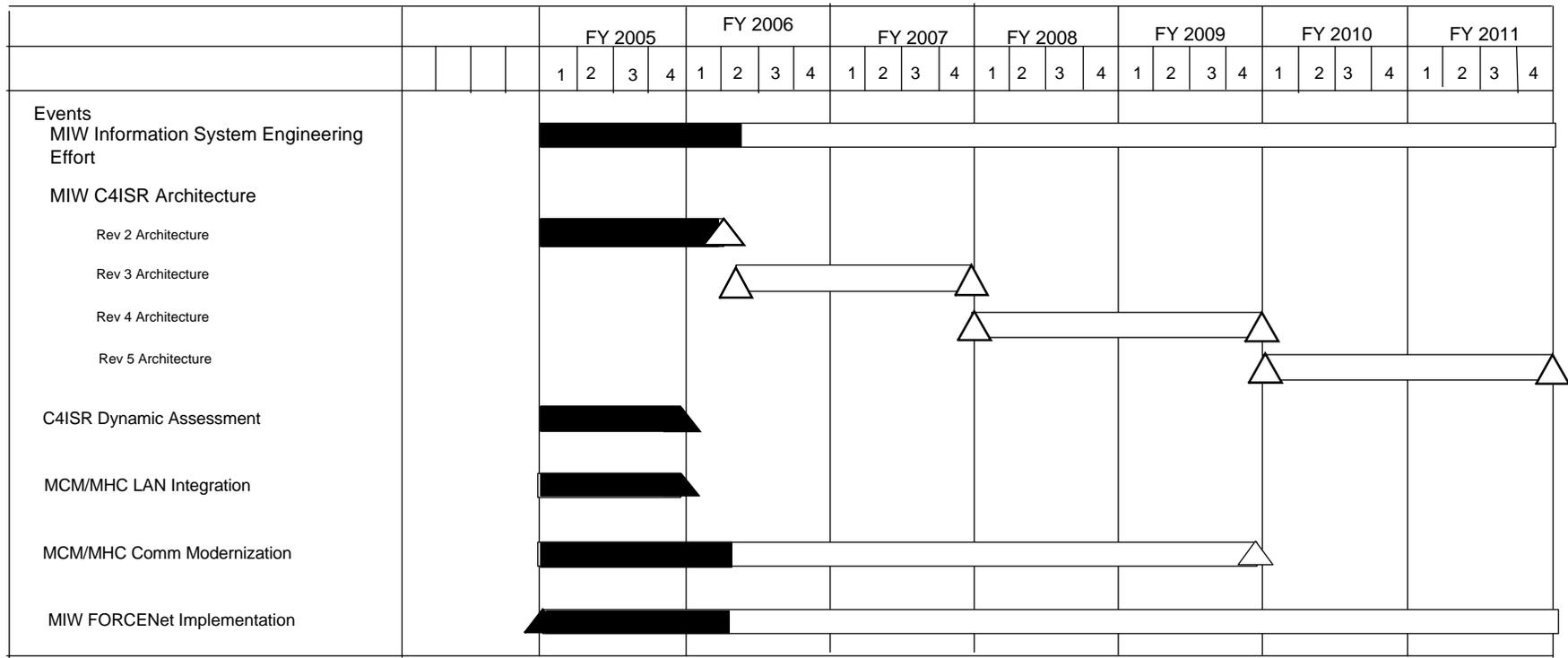
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades

MIW C4ISR PROGRAM SCHEDULE



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EXHIBIT R-4, Schedule Profile													DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4				PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM				PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades																					
COAP																													
		FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
		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
Events		<p>The Gantt chart displays the schedule for three builds (Build 0, Build 1, and Build 2) from FY 2006 to FY 2011. Each build is represented by a horizontal bar divided into three segments: Development and Test (shaded), Integration and Test (white), and IOC (white). Triangles indicate key milestones. Build 0 starts in FY 2006, Build 1 in FY 2007, and Build 2 in FY 2008. The IOC for each build occurs in the following fiscal year.</p>																											

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APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER																											
RDT&E, N/BA-4				0603502N, Surface & Shallow Water MCM				1233 Mine Counter Measures Mid-Life Upgrades																											
GCCS-M 4.x for MCM PROGRAM SCHEDULE																																			
				FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011							
Events				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
Development and Integration of GCCS-M 4.x hardware:																																			
M-class ships								██████████																											
Expeditionary units								██████████																											

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EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades
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MEDAL PROGRAM SCHEDULE

Events	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
Build 10																												
Integration and Test																												
IOC																												
Build 11																												
Development and Test																												
Integration and Test																												
IOC																												
Build 12																												
Development and Test																												
Integration and Test																												
IOC																												
Build 13																												
Development and Test																												
Integration and Test																												
IOC																												

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM				PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades																							
MEDAL PROGRAM SCHEDULE CONT'D																													
		FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
		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
Events																													
Build 14																													
Development and Test																													
Integration and Test																													

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 1233 Mine Counter Measures Mid-Life Upgrades
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USV PROGRAM SCHEDULE

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
USV Contract Award									△																			
SDD Phase									▬																			
CT/DT													△				△											
OT																					△							
LRIP Decision/Milestone C																					△							
LRIP Production																					△							
Full Rate Production Decision																									△			

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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 0603502N				PROJECT NUMBER AND NAME Unmanned Undersea Vehicle 2094					
COST (\$ in Millions)	Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program	
Project Cost	300.966	58.745	53.805	42.224	56.773	60.020	108.618	160.047	Continuing	Continuing	
RDT&E Articles Qty			2				1	4		7	

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The November 2004 UUV Master Plan establishes Intelligence, Surveillance, and Reconnaissance (ISR) as the Navy's top UUV priority. The second priority is to provide a clandestine, mine reconnaissance capability and Anti-Submarine Warfare is priority three.

The Unmanned Undersea Vehicle (UUV) project funds development of UUV systems consistent with the 2004 UUV Master Plan. The AN/BLQ-11 Long-Term Mine Reconnaissance System (LMRS) was being developed to provide a robust, long-term Fleet capability to conduct clandestine minefield reconnaissance. The LMRS Engineering Development Model (EDM) will be completed to mature and test critical technology for follow-on UUVs. The Advanced Development UUV (ADUUV) development will continue to mature and test critical modular UUV design technology for follow-on UUV programs. The UUV program will continue to mature key UUV technologies and sonar sensors for follow-on UUV programs. Planning has begun for a new acquisition program to develop a modular, reconfigurable 21" MRUUV System (MRUUVS) for contract award in FY07. The first payload developed by this program will support the MCM mission. Other modular payload developments will be initiated beginning in FY09. An AOA for the Large Displacement (LD) MRUUV was completed in FY04. The Office of Naval Research will develop technologies for payload sensors and increased autonomy to support risk mitigation for the UUV program. Technologies from these systems will transition to UUV during the FNC demonstration year. Technology Transition agreements between the Program office and ONR have been signed.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 0603502N	PROJECT NUMBER AND NAME Unmanned Undersea Vehicle 2094/2852

(U) B. Accomplishments/Planned Program

LMRS	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	22.854	3.555	0.000	
RDT&E Articles Quantity		1		

Complete launch and recovery testing from an SSN. Conduct contract closeout.

ADUUV	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	15.557	12.959	0.000	
RDT&E Articles Quantity		1		

Complete development of an Advanced Development Unmanned Undersea Vehicle (ADUUV) and integrate Litttoral - Precision Underwater Mapping Array (LPUMA) with ADUUV for 21" MRUUVS risk reduction.

21" MRUUVS	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	19.923	36.459	42.224	
RDT&E Articles Quantity				

Continue pre milestone B risk reduction and acquisition planning for 21" MRUUV program.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 0603502N	PROJECT NUMBER AND NAME Unmanned Undersea Vehicle 2094/2852
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(U) B. Accomplishments/Planned Program

LD MRUUV	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	0.411	0.832	0.000	
RDT&E Articles Quantity				

Conduct LD MRUUV requirements study.

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 060325N	PROJECT NUMBER AND NAME Unmanned Undersea Vehicle Q2094
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(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Controls:	59.965	54.633	52.176
FY07 President's Controls:	58.745	53.805	42.224
Total Adjustments	-1.220	-0.828	-9.952

Summary of Adjustments

Pay Rates		0.061
Inflation		0.232
Programmatic Changes		-10.007
Warfare Center Rates		-0.238
Miscellaneous Adjustments	-1.220	-0.828
Subtotal	-1.220	-9.952

(U) Schedule:
Not Applicable

(U) Technical:
Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 0603502N	PROJECT NUMBER AND NAME Unmanned Undersea Vehicle 2094																			
<p>(U) D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Line Item No. & Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2005</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2006</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2007</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2011</u></th> </tr> </thead> <tbody> <tr> <td style="height: 150px;"> </td> <td> </td> </tr> </tbody> </table> <p>(U) E. ACQUISITION STRATEGY:</p> <p>A modular, reconfigurable 21" MRUUVS will be initiated with a competitively awarded contract planned for FY07.</p>						<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>								
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>														

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			Surface & Shallow Water MCM, 0603502N			Unmanned Undersea Vehicle 2094						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY07 Costs	FY 07 Award Date			
LMRS	CPAF/IF	Boeing	119.529	10.544	N/A	0.800	N/A					
Fees			7.612									
LMRS	Various	Various	40.778	2.844	N/A	2.755	N/A					
ADUUV	CPIF	Lockheed Martin	17.244	6.974	N/A	7.000	N/A					
ADUUV	Various	Various	14.873	3.049		2.717						
UUV P3I	Various	Various	37.383									
21" MRUUVS	Various	Various	4.200	19.923		27.232		28.377	TBD			
UUV Test center	Various	Various	7.502									
LD MRUUV	Various	Various		0.411		0.832						
Subtotal Product Development			249.121	43.745		41.336		28.377				
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000				
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			Surface & Shallow Water MCM, 0603502N			Unmanned Undersea Vehicle 2094						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY07 Costs	FY 07 Award Date			
Developmental Test & Evaluation	Various	Various	5.978	5.459	N/A		N/A		N/A			
Operational Test & Evaluation	WR	Various	0.000		N/A		N/A		N/A			
GFE/GFI	Various	Various	0.644		N/A		N/A		TBD			
TTLRF	WR	Various	7.081		N/A		N/A		N/A			
Award Fees												
Subtotal T&E			13.703	5.459		0.000		0.000				
Remarks:												
Contractor Engineering Support			6.024	2.214	N/A	2.174	N/A	1.955	N/A			
Government Engineering Support			24.119	4.076	N/A	4.990	N/A	4.450	N/A			
Program Management Support			7.999	3.251	N/A	5.305	N/A	7.442	N/A			
Subtotal Management			38.142	9.541		12.469		13.847				
Remarks:												
Total Cost			300.966	58.745		53.805		42.224				

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VIRGINIA CLASS FOT&E |

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																					DATE: February 2006															
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME																					
RDT&E, N /					Surface & Shallow Water MCM, 0603502N										Unmanned Undersea Vehicle 2094/2852																					
Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012							
	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				
Complete LMRS Baseline	[Bar]				[Bar]																															
	DTIIB		TECHEVAL/OA																																	
ADUUV Development/ LPUMA Integration	[Bar]																																			
21" MRUUVS	Risk Reduction/Acquisition Planning																																			
					MS B				Contract Award				Design /Development / Test Phase								MS C				LRIP											
Large Diameter Vehicle Launch and Recovery Risk Reduction													Large Displacement Vehicle Risk Reduction																							
LD MR UUV Development Phase																					Design/Develop LDMRUUV															
																					MS B															

R-1 SHOPPING LIST - Item No. 36

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

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 2131 Assault Breaching Systems					
COST (\$ in Millions)		Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
Project Cost		190.493	15.721	28.777	37.083	36.116	35.367	30.562	29.513	Continuing	Continuing
RDT&E Articles Qty											0

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

This program provides US Navy projects planned to counter the threat to amphibious landing forces from known and projected foreign land/sea mines and obstacles in the beach zone and surf zone approaches to amphibious assault areas. It develops a system of systems (Countermine/Counter Obstacle, Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T), Navigation/Virtual Marking/Integration, C4I/Data Fusion) to provide a full assault breaching capability. Funding in FY 2004 is a Congressional Plus-Up for Venom Penetrator (part of the Counter mine demonstration).

The Counter Mine (CM) system will transition from a 6.3 S&T Concept Demonstration effort to a 6.4 development program after a concept decision/AoA in FY06. Three 6.3 S&T concepts will demonstrate the countermine technology by the beginning of FY05. A concept/decision/AoA will occur in FY05 and one of the concepts or a combination of the technologies will be chosen to move into the 6.4 development phase as the CM System (far-term).

A near-term Counter Mine/Counter Obstacle (CM/CO) system is also being characterized at the 6.3 S&T level to be used in the Fleet as an interim CM/CO capability until the "Far-Term" CM system is developed. This near-term system Joint Directed Attack Munition (JDAM) JDAM Assault Breaching System (JABS) consists of in-service MK 84 general purpose bombs with a JDAM tail kit. This system is already being used in the fleet, however it is being characterized for a limited assault breaching mission. Some Follow-On-Test and Evaluation (FOT&E), risk mitigation, logistics, and operational readiness concerns need to be addressed for the ABS mission with ABS funding.

The ISR/T capability is being provided by the Coastal Battlefield Reconnaissance & Analysis (COBRA) system. COBRA consists of three block capabilities which will all be integrated into the Fire Scout Unmanned Aerial Vehicle (UAV) as Littoral Combat Ship (LCS) Mission Modules. Block I capability is to detect surface laid mine lines on the beach (daytime) using Multi-spectral imaging. Block II will incorporate active laser technology which will transition from 6.3 S&T to detect surface laid mine lines in the surf zone (day and night). Block III will transition technology from 6.3 S&T to detect buried mine lines and will include on-board near real-time processing of imagery data.

The navigation effort involves requirements development and program planning to choose the navigational upgrades for the Landing Craft, Air Cushion (LCAC) and Landing Craft, Utility (LCU) to enable the craft to safely navigate the neutralized assault lanes. OP,N will fund the CRAFTALTS to upgrade the navigation systems.

After the assault lane has been neutralized, virtual or physical marking systems need to be developed to mark where the lane has been cleared and guide the assault craft through the lane.

Command, Control, Computers, Communications and Intelligence (C4I) will tie all of the above systems together under an integrated ABS architecture and also tie in with the integrated Mine Warfare architecture.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 2131 Assault Breaching Systems
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(U) B. Accomplishments/Planned Program

Product Development		FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost		10.063	19.110	30.812
RDT&E Articles Quantity				

Product Development:
Venom Penetrator. Far term technology maturity (Counter mine), ISR/Targeting Development (COBRA), Government Furnished Equipment (GFE): Mine Threat Acquisition for R&D Development and Testing, DDGPS Development (Marking). Counter Mine System Development Contract beginning in FY06.

Support		FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost		1.237	1.125	0.357
RDT&E Articles Quantity				

Support:
Venom Penetrator. Mine Burial Effects/Mine Case/TNT Studies in support of requirements development, Fuse Vulnerability Studies. Tactical Decision Aid Development, Modeling and Simulation in support of Far-Term Development. ABS Scalability study.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 2131 Assault Breaching Systems

(U) B. Accomplishments/Planned Program

Test and Evaluation	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.331	2.865	0.170
RDT&E Articles Quantity			

Test and Evaluation:
Venom Penetrator. Near Term (JABS) Risk Mitigation Testing; Commander Operational Test & Evaluation Forces Test Support.

Management	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	4.090	5.677	5.744
RDT&E Articles Quantity			

Management:
Venom Penetrator. Program management support, In-house contractor support (CACI, COMOPTVFOR, and Northrop Grumman). Technical Direction Agent/Design Agent (TDA/DA) Engineering Support of Mission Area Analysis, Analysis of Alternatives, Milestone B preparation, contract and acquisition documentation, Requirements Generation - Initial Capabilities Document (ICD), Capability Development Documents (CDD), Capability Production Documents (CPD), Analysis of Material approvals and Functional needs analysis/functional solutions analysis, Mine magazine inventory management and shipping, contract management and tests/studies, C4I/Data fusion.

Total	15.721	28.777	37.083
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UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006																																				
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4		R-1 ITEM NOMENCLATURE 2131 Assault Breaching Systems																																				
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding-left: 20px;">(U) C. PROGRAM CHANGE SUMMARY:</th> <th style="text-align: right; padding-right: 20px;">FY 2005</th> <th style="text-align: right; padding-right: 20px;">FY 2006</th> <th style="text-align: right; padding-right: 20px;">FY 2007</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 20px;">FY06 President's Budget</td> <td style="text-align: right;">26.808</td> <td style="text-align: right;">29.215</td> <td style="text-align: right;">37.530</td> </tr> <tr> <td style="padding-left: 20px;">FY07 President's Budget</td> <td style="text-align: right;">15.721</td> <td style="text-align: right;">28.777</td> <td style="text-align: right;">37.083</td> </tr> <tr> <td style="padding-left: 20px;">Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">(11.087)</td> <td style="text-align: right; border-top: 1px solid black;">(0.438)</td> <td style="text-align: right; border-top: 1px solid black;">(0.447)</td> </tr> <tr> <td colspan="4" style="padding-left: 40px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 60px;">Inflation</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.167</td> </tr> <tr> <td style="padding-left: 60px;">Pay Rates</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.053</td> </tr> <tr> <td style="padding-left: 60px;">Programmatic Changes</td> <td style="text-align: right; border-top: 1px solid black;">(11.087)</td> <td style="text-align: right; border-top: 1px solid black;">(0.438)</td> <td style="text-align: right; border-top: 1px solid black;">(0.667)</td> </tr> <tr> <td style="padding-left: 60px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">(11.087)</td> <td style="text-align: right; border-top: 1px solid black;">(0.438)</td> <td style="text-align: right; border-top: 1px solid black;">(0.447)</td> </tr> </tbody> </table> <p>(U) Schedule: Not Applicable</p> <p>(U) Technical: Not Applicable</p>			(U) C. PROGRAM CHANGE SUMMARY:	FY 2005	FY 2006	FY 2007	FY06 President's Budget	26.808	29.215	37.530	FY07 President's Budget	15.721	28.777	37.083	Total Adjustments	(11.087)	(0.438)	(0.447)	Summary of Adjustments				Inflation	0.000	0.000	0.167	Pay Rates	0.000	0.000	0.053	Programmatic Changes	(11.087)	(0.438)	(0.667)	Subtotal	(11.087)	(0.438)	(0.447)
(U) C. PROGRAM CHANGE SUMMARY:	FY 2005	FY 2006	FY 2007																																			
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R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006																					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME 2131 Assault Breaching Systems																						
<p>(U) D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Line Item No. & Name</th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2005</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2006</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2007</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2011</u></th> <th style="text-align: center; border-bottom: 1px solid black;">To Complete</th> <th style="text-align: center; border-bottom: 1px solid black;">Total Cost</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">2624 / OPN</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">2.247</td> <td style="text-align: center; padding: 5px;">8.269</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) E. ACQUISITION STRATEGY:</p> <p>The FY04 and FY05 Initial Capabilities Document (ICD) and Capability Development Documents (CDD) tasks specifically complete the requirements generation process for the overarching mission area of Amphibious Operations in a Mined Environment leading to a MS B decision during FY06. The Functional Area Analysis (FAA) will provide the foundation for the "system of systems ICD/CDD required for Amphibious Operations in a Mined Environment. The FY04 and FY05 tasks will also allow the Navy to demonstrate the viability of concepts for Far Term System of Systems capabilities and justify the need for future funding. The FY04 funding was crucial to maintaining the inventory of threat mines that will be required for future mine lethality and vulnerability tests. The FY04 and FY05 tasks will develop ISR/Targeting systems and Navigation systems to support the Assault Breaching Mission. Milestone B for Countermine system development will occur in FY06 followed by a development contract award for the Countermine system development in FY06. Development of Block I COBRA(ISR/T) will continue into FY06 to prepare for a delivery of a Block I system for LCS Flight 0. FY07 funding will begin development of the COBRA Block II system to detect mine lines in the Surf Zone. The OPN in FY06 will go toward funding Navigational upgrades to the LCAC and LCU craft for more accurate navigation through the surf zone. FY07 OPN will also continue the Navigation upgrades to the LCAC and LCU as well as procure Block I COBRA systems for LCS Mission Modules.</p>									Line Item No. & Name	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	To Complete	Total Cost	2624 / OPN	0.000	2.247	8.269						
Line Item No. & Name	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	To Complete	Total Cost																			
2624 / OPN	0.000	2.247	8.269																									

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM				2131 Assault Breaching Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX, PD	IH, NSWC:PC TBD	26.422			0.331	11/04	2.865	11/05	0.170	11/06	Continuing	Continuing	N/A
Operational Test & Evaluation	WX	IH, NSWC:PC TBD	8.655										8.655	N/A
Tooling	WX	IH, NSWC:PC TBD	0.700										0.700	N/A
GFE	WX	IH, NSWC:PC TBD	0.400										0.400	N/A
Award Fees														
Subtotal T&E			36.177			0.331		2.865		0.170		0.000	39.543	
Remarks:														
Contractor Engineering Support	CPFF	CACI, Northrup Grumman	3.089			0.700	11/04	0.878	11/05	0.904	11/06	Continuing	Continuing	N/A
Government Engineering Support	WX	IH, NSWC:PC	19.053			1.797	11/04	1.835	11/05	1.950	11/06	Continuing	Continuing	N/A
Program Management Support	WX	IH, NSWC:PC, NAVSEA	11.537			0.207	11/04	2.889	11/05	2.815	11/06	Continuing	Continuing	N/A
Travel	PD	NAVSEA	0.877			0.025	11/04	0.075	11/05	0.075	11/06	Continuing	Continuing	N/A
Assessment/BTR	Various	Various	0.073			1.361							1.434	N/A
Subtotal Management			34.629			4.090		5.677		5.744		0.000	50.140	
Remarks:														
Total Cost			190.493			15.721		28.777		37.083		0.000	272.074	

R-1 SHOPPING LIST - Item No.36

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 60 of 98)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM
PROJECT NAME AND NUMBER 2131 Assault Breaching Systems	

ABS PROGRAM SCHEDULE

		FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
		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
Milestones	MS B (COBRA) Block I	▲				△ MS B (CM)																							
ONR 6.3 Demo Efforts		■								CM and CO Exploration/Technology																			
CMCO Acquisition/Development 6.4		■												CM and CO System Development															
CMCO System Design and Test		Draft CDD/Approval				Prep for MS B/Contract Award				△ CM - CO Contract Award				System Design/Platform Integration															
CMCO Technical Reviews						◇ Contract Kickoff				◇ SRR ◇ SFR ◇ SSR ◇ PDR				◇ EOA ◇ CDR															
ISR/Navigation/C4I Development		■				ISR/Nav/C4I System Development																							

R-1 SHOPPING LIST - Item No. 36

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 61 of 98)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 3102 Low Frequency Broadband					
COST (\$ in Millions)	Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program	
Project Cost	0.000	0.000	9.702	0.000	0.000	0.000	0.000	0.000		9.702	
RDT&E Articles Qty											

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

Low Frequency Broadband (LFBB) is a development program for providing Low-frequency, broadband (LFBB) sensor and processor payload for an unmanned, underwater vehicle (UUV). The project provides a needed capability for detection of buried mines and identification of mines by a combination of imaging and non-imaging signal processing technologies. This technology is being transitioned from ONR projects, which have demonstrated the technology, but need to be transitioned into a system. Funding for this program has been transferred to the Surface Mine Countermeasures Unmanned Undersea Vehicle (SMCM UUV, Project 3123) starting in FY07.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 3102 Low Frequency Broadband

(U) B. Accomplishments/Planned Program

Product Development	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	9.702	0.000	
RDT&E Articles Quantity				

Product Development:
Design and prototyping of critical technology components for demonstration and evaluation.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 060325N	PROJECT NUMBER AND NAME 3102 Low Frequency Broadband																																	
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">(U) Funding:</th> <th style="text-align: right; padding: 5px;">FY 2005</th> <th style="text-align: right; padding: 5px;">FY 2006</th> <th style="text-align: right; padding: 5px;">FY 2007</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">FY06 President's Budget Controls:</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">9.850</td> <td style="text-align: right; padding: 5px;">15.470</td> </tr> <tr> <td style="padding: 5px;">FY07 President's Budget Controls:</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">9.702</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> <tr> <td style="padding: 5px;">Total Adjustments</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.148</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-15.470</td> </tr> <tr> <td colspan="4" style="padding: 10px 0 0 40px;">Summary of Adjustments</td> </tr> <tr> <td style="padding: 5px;">Programmatic Changes</td> <td></td> <td></td> <td style="text-align: right; padding: 5px;">-15.470</td> </tr> <tr> <td style="padding: 5px;">Other General Provisions</td> <td></td> <td style="text-align: right; padding: 5px;">-0.148</td> <td></td> </tr> <tr> <td style="padding: 5px;">Subtotal</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.148</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-15.470</td> </tr> </tbody> </table> <p style="padding: 10px 0 0 40px;">(U) Schedule: Not Applicable</p> <p style="padding: 10px 0 0 40px;">(U) Technical: Not Applicable</p>				(U) Funding:	FY 2005	FY 2006	FY 2007	FY06 President's Budget Controls:	0.000	9.850	15.470	FY07 President's Budget Controls:	0.000	9.702	0.000	Total Adjustments	0.000	-0.148	-15.470	Summary of Adjustments				Programmatic Changes			-15.470	Other General Provisions		-0.148		Subtotal	0.000	-0.148	-15.470
(U) Funding:	FY 2005	FY 2006	FY 2007																																
FY06 President's Budget Controls:	0.000	9.850	15.470																																
FY07 President's Budget Controls:	0.000	9.702	0.000																																
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 3102 Low Frequency Broadband
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>

(U) E. ACQUISITION STRATEGY:

NSWC, Panama City FL and NRL will award a contract to address the critical technologies necessary for the development of the LFBB Sonar. Procurement is scheduled to start in FY10.

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			3102 Low Frequency Broadband								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
ADM Hardware Development		Contractors - Two (TBD)				5.102	03/06						5.102	
Subtotal Product Development			0.000	0.000		5.102							5.102	
Remarks:														
Software Development		Contractors (TBD)				2.350	03/06						2.350	
Integrated Logistics Support	WX	NSWC, Panama, City, FL				0.250							0.250	
Subtotal Support			0.000	0.000		2.600							2.600	

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			3102 Low Frequency Broadband								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 07	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WX	NSWC:PC, NRL				0.550	03/06					0.550	N/A	
													N/A	
													N/A	
Subtotal T&E			0.000	0.000		0.550		0.000		0.000		0.550		
Remarks:														
Government Engineering Support	WX	NSWC, Panama, City, FL				0.650						0.650	N/A	
Program Management Support	Various	Various				0.800						0.800	N/A	
													N/A	
													N/A	
													N/A	
Subtotal Management			0.000	0.000		1.450		0.000		0.000		1.450		
Remarks:														
Total Cost			0.000	0.000		9.702		0.000		0.000		9.702		
Remarks:														

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CLASSIFICATION:

EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 3102 Low Frequency Broadband
---	--	---

LOW FREQUENCY BROADBAND PROGRAM SCHEDULE

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011											
	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	1	2	3	4
ADM Contract Award Critical Technology Development							△																													

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 3123 SMCM UUV					
COST (\$ in Millions)	Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program	
Project Cost	0.000	0.000	1.047	11.222	7.333	12.443	24.049	20.131	Continuing	Continuing	
RDT&E Articles Qty											

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

The Surface Mine Countermeasure Unmanned Undersea Vehicle (SMCM UUV) provides for development of Unmanned Underwater Vehicles to support dedicated mine countermeasure operations. The UUV systems must have a small deployment footprint for rapid employment aboard various SMCM platforms. Equipment includes Launch Recovery Sub-Systems and associated systems support equipment.

*This effort was previously budgeted for in PE 0603654N, project 4024. The project was moved to 0603502N so that all of the UUV funding would fall into one R&D PE. In addition, funding from PE 0603502N 3102 was transferred to this line to fund an integrated UUV system vice a standalone sensor project.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 060325N	PROJECT NUMBER AND NAME 3123 SMCM UUV
---	--	--

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget Controls:	0.000	1.063	1.761
FY07 President's Budget Controls:	0.000	1.047	11.222
Total Adjustments	0.000	-0.016	9.461

Summary of Adjustments

Pay Rates		0.016
Inflation		0.052
Programmatic Changes		9.419
Warfare Center Rates		-0.026
Other General Provisions	-0.016	
Subtotal	0.000	-0.016
		9.461

(U) Schedule:
Not Applicable

(U) Technical:
Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface & Shallow Water MCM	PROJECT NUMBER AND NAME 3123 SMCM UUV
---	--	--

(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
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(U) E. ACQUISITION STRATEGY:

The SMCM UUV Analysis of Alternatives (AOA) will complete in Apr 06, resulting in a draft Capability Description Document by the end of FY06. The SMCM UUV program will procure 3 dual frequency Synthetic Aperture Sonar User Operational Evaluation Systems of 2 vehicles each in FY06 with delivery in early FY08 for continued Fleet experimentation. An acquisition program will be initiated in FY08 to procure Unmanned Undersea Vehicles equipped with Low Frequency Broadband sonar, culminating in a Milestone C in FY11.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603502N, Surface & Shallow Water MCM			3123 SMCM UUV							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date		Cost to Complete	Total Cost	Target Value of Contract
Dual Freq SAS Hardware Development	CPAF	TBD	0.000					8.153	11/06		Continuing	Continuing	
Software Development	WX	NSWC Panamant City, FL	0.000			0.584	5/06	0.450	11/06		Continuing	Continuing	
SMCM UUV Contractors	CPFF	Multiple	0.000			0.041	5/06	0.091	11/06				
Subtotal Product Development			0.000	0.000		0.625		8.694			0.000	9.319	
Engineering Support	WX	NSWC Panama City, FL				0.113	4/06	1.807	11/06				
Engineering Support	WX	NUWC Newport, RI						0.301	11/06				
Subtotal Support						0.113		2.108			0.000	2.221	
Remarks:													

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603502N, Surface & Shallow Water MCM				3123 SMCM UUV							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	CMWC, Corpus Christi, TX	0.000			0.120	4/06	0.120	11/06			Continuing	Continuing	
Subtotal T&E			0.000	0.000		0.120		0.120				0.000	0.240	
Remarks:														
Program Management Support	CPFF	Anteon, Wash, DC						0.120	11/06			Continuing	Continuing	
Government Engineering Support	CPFF	EDO, Corpus Christi, TX				0.189	4/06	0.180	11/06			Continuing	Continuing	
Subtotal Management			0.000			0.189		0.300				0.000	0.489	
Remarks:														
Total Cost			0.000	0.000		1.047		11.222		0.000		0.000	12.269	
Remarks:														

CLASSIFICATION:

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EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND 0603502N, Surface & Shallow Wat	PROJECT NAME AND NUMBER 3123 SMCM UUV
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SMCM UUV Program Schedule

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
SMCM Shallow & Deep Water UUV																												
Notional CONOPS (AOA) Study				▲																								
Requirements Definition																												
Dual Frequency SAS UOES Contract Award								▲																				
Dual Freq SAS Development																												
Dual Freq SAS Fleet Experimentation																												
LFBB UUV Milestone B																												
LFBB UUV Contract Award																												
LFBB UUV Development																												
LFBB UUV Milestone C																												
LFBB UUV Production																												

R-1 SHOPPING LIST - ITEM NO.

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Exhibit R-2, RD TEN Budget Item Justification

(Exhibit R-2, page 77 of 98)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 4025 Expendable Mine Neutralization System					
COST (\$ in Millions)	Prior Years Cost		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
Project Cost	0.000		1.825	8.334	13.760	0.000	0.000	0.000	0.000	0.000	23.919
RDT&E Articles Qty											0

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

Expendable Mine Neutralization System (EMNS) is a replacement to the existing AN/SLQ-48 Mine Neutralization System (MNS). The current program replaces the MNS with EMNS on the 14 MCM Avenger Class Ships. EMNS will leverage off of on-going efforts in the Airborne Mine Countermeasures Program to develop an Airborne Mine Neutralization System (AMNS).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 4025 Expendable Mine Neutralization System
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(U) B. Accomplishments/Planned Program

Product Development		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.203	6.326	4.730
RDT&E Articles Quantity				

Product Development:
Award Development Contract for Expendable Mine Neutralization System (EMNS) developer. Initiate hardware design and development. Modify software for use on an MCM class ship. Integrate EMNS Engineering Development Model (EDM) aboard MCM-1 Class Ship.

Support		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.092	1.000	0.900
RDT&E Articles Quantity				

Support:
Develop logistics products, including training materials and interactive technical manual.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM	PROJECT NUMBER AND NAME 4025 Expendable Mine Neutralization System		
(U) B. Accomplishments/Planned Program				
Test and Evaluation				
Accomplishments/Effort/Subtotal Cost		FY 05 0.100	FY 06 0.578	FY 07 7.700
RDT&E Articles Quantity				
Test and Evaluation: EMNS developmental testing including environmental and shock testing, safety testing, developmental and operational testing. Develop Test and Evaluation Master Plan (TEMP) and test reports.				
Management				
Accomplishments/Effort/Subtotal Cost		FY 05 0.430	FY 06 0.430	FY 07 0.430
RDT&E Articles Quantity				
Management: Provide program management support and travel for EMNS.				
Total		1.825	8.334	13.760

R-1 SHOPPING LIST - Item No. 36

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4		4025 Expendable Mine Neutralization System	
(U) C. PROGRAM CHANGE SUMMARY:			
(U) C. PROGRAM CHANGE SUMMARY:			
	FY 2005	FY 2006	FY 2007
FY06 President's Budget	2.155	11.506	14.030
FY07 President's Budget	1.825	8.334	13.760
Total Adjustments	(0.330)	(3.172)	(0.270)
Summary of Adjustments:			
Inflation	0.000	0.000	0.062
Pay Rates	0.000	0.000	0.020
Programmatic Changes	(0.330)	(3.172)	(0.352)
Subtotal	(0.330)	(3.172)	(0.270)
Note: FY06 - \$3M Congressional reduction for late contract award.			
(U) Schedule: Not Applicable			
(U) Technical: Not Applicable			

R-1 SHOPPING LIST - Item No. 36

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006																							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME 4025 Expendable Mine Neutralization System																							
<p>(U) D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Line Item No. & Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2005</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2006</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2007</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2011</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>To Complete</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td colspan="10" style="padding: 20px 0 0 0;"> <p>(U) E. ACQUISITION STRATEGY:</p> <p>The Airborne Mine Countermeasures Program is developing a Rapid Deployment Capability (RDC) system with the SEAFOX neutralizer for the MH-53E helicopter and a traditional (acquisition program) system with the Archerfish neutralizer for the MH-60s helicopter. Based on Surface Ship requirements, one of these two variants will likely be selected for use on the MCM Avenger Class Ships. The acquisition strategy will be full and open competition for system development, likely using one of the neutralizer variants.</p> </td> </tr> </tbody> </table>										<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	<p>(U) E. ACQUISITION STRATEGY:</p> <p>The Airborne Mine Countermeasures Program is developing a Rapid Deployment Capability (RDC) system with the SEAFOX neutralizer for the MH-53E helicopter and a traditional (acquisition program) system with the Archerfish neutralizer for the MH-60s helicopter. Based on Surface Ship requirements, one of these two variants will likely be selected for use on the MCM Avenger Class Ships. The acquisition strategy will be full and open competition for system development, likely using one of the neutralizer variants.</p>									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>																				
<p>(U) E. ACQUISITION STRATEGY:</p> <p>The Airborne Mine Countermeasures Program is developing a Rapid Deployment Capability (RDC) system with the SEAFOX neutralizer for the MH-53E helicopter and a traditional (acquisition program) system with the Archerfish neutralizer for the MH-60s helicopter. Based on Surface Ship requirements, one of these two variants will likely be selected for use on the MCM Avenger Class Ships. The acquisition strategy will be full and open competition for system development, likely using one of the neutralizer variants.</p>																													

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603502N, Surface and Shallow Water MCM			4025 Expendable Mine Neutralization System								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Develop TEMP	WX	NSWC, Panama City, FL				0.100	10/04	0.100	10/05			0.000	0.200	N/A
Environmental and Shock Testing	WX	NSWC, Panama City, FL						0.240	10/05	0.500	10/06	0.000	0.740	N/A
CT/DT/OT	CPIF	TBD						0.100	10/05	1.470	10/06	0.000	1.570	N/A
CT/DT/OT	WX	NSWC, Panama City, FL								4.230	10/06	0.000	4.230	
Safety Testing	WX	NSWC, Panama City, FL						0.138	10/05	1.500	10/06	0.000	1.638	
Subtotal T&E			0.000			0.100		0.578		7.700		0.000	8.378	
Remarks:														
Program Mangement Support	CPFF	CACI	0.000			0.150	10/04	0.150	10/05	0.150	10/06	0.000	0.450	N/A
Travel	Various	NAVSEA	0.000			0.050	10/04	0.050	10/05	0.050	10/06	0.000	0.150	N/A
Government Engineering Support	WX	NSWC, Panama City, FL				0.230	10/04	0.230	10/05	0.230	10/06	0.000	0.690	N/A
														N/A
														N/A
Subtotal Management			0.000			0.430		0.430		0.430		0.000	1.290	
Remarks:														
Total Cost			0.000			1.825		8.334		13.760		0.000	23.919	
Remarks:														

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 86 of 98)

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CLASSIFICATION:

EXHIBIT R-4, Schedule Profile			DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM		PROJECT NAME AND NUMBER 4025 Expendable Mine Neutralization System	

EMNS PROGRAM SCHEDULE

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
Contract Award																												
HW/SW Design and Development																												
Preliminary Design Review																												
Critical Design Review																												
Contractor / Development Testing																												
EDM Install / Checkout																												
TECHEVAL/OPEVAL																												
Milestone C																												

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 87 of 98)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 9513 Battlespace Preparation Autonomous Undersea Vehicle (BPAUV)					
COST (\$ in Millions)	Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program	
Project Cost	0.000	0.964*	0.000	0.000	0.000	0.000	0.000	0.000		0.964	
RDT&E Articles Qty											

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

* Congressional plus up of the Battlespace Preparation Autonomous Undersea Vehicle (BPAUV) is an unmanned system capable of minehunting and oceanographic data gathering. The BPAUV will be launched and recovered from Littoral Combat Ship (LCS) Flight 0. The Congressional plus up partially funds the development of an engineering development system. BPAUV will be partially funded via the LCS mission module funding.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface & Shallow Water MCM	PROJECT NUMBER AND NAME 9513 BPAUV		
(U) B. Accomplishments/Planned Program				
BPAUV	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.964*	0.000	0.000	
RDT&E Articles Quantity				
* Congressional plus. Develop, integrate and test two engineering development systems.				
Total	0.964	0.000	0.000	

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 060325N	PROJECT NUMBER AND NAME 9513 BPAUV																																
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: right;">FY 2005</th> <th style="width: 10%; text-align: right;">FY 2006</th> <th style="width: 10%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>(U) Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY06 President's Controls:</td> <td style="text-align: right;">0.991</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>FY07 DON Controls:</td> <td style="text-align: right;">0.964</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.027</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> <tr> <td colspan="4" style="padding-left: 40px;">Summary of Adjustments</td> </tr> <tr> <td>Other General Provisions</td> <td style="text-align: right;">-0.027</td> <td></td> <td></td> </tr> <tr> <td>Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.027</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Schedule: Not Applicable</p> <p style="margin-top: 20px;">(U) Technical: Not Applicable</p>				FY 2005	FY 2006	FY 2007	(U) Funding:				FY06 President's Controls:	0.991	0.000	0.000	FY07 DON Controls:	0.964	0.000	0.000	Total Adjustments	-0.027	0.000	0.000	Summary of Adjustments				Other General Provisions	-0.027			Subtotal	-0.027	0.000	0.000
	FY 2005	FY 2006	FY 2007																															
(U) Funding:																																		
FY06 President's Controls:	0.991	0.000	0.000																															
FY07 DON Controls:	0.964	0.000	0.000																															
Total Adjustments	-0.027	0.000	0.000																															
Summary of Adjustments																																		
Other General Provisions	-0.027																																	
Subtotal	-0.027	0.000	0.000																															

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface & Shallow Water MCM	PROJECT NUMBER AND NAME 9513 BPAUV
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
BPAUV 0603581N/14KB - RDT&E	4.000	2.700	2.200						

(U) E. ACQUISITION STRATEGY: *

An engineering development system Battlespace Preparation Autonomous Undersea Vehicles (BPAUV) will be procured for LCS Flight 0 experimentation.

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NUMBER AND NAME									
RDT&E, N / BA-4				0603502N, Surface & Shallow Water MCM			9513 BPAUV									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract		
BPAUV - Primary Hardware development	Contract	Bluefin	0.000	0.964	09/05								0.964			
Subtotal Product Development			0.000	0.964		0.000		0.000				0.000	0.964			
Remarks: FY05 BPAUV Congressional add.																
Program Management Support																
Program Management Support																
Training Development																
Integrated Logistics Support																
Configuration Management																
Technical Data																
GFE																
Award Fees																
Subtotal Support			0.000			0.000		0.000				0.000	0.000			
Remarks:																

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 9513 BPAUV								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation															
Operational Test & Evaluation															
Subtotal T&E			0.000	0.000		0.000		0.000				0.000	0.000		
Remarks:															
Program Management Support															
Miscellaneous															
Subtotal Management			0.000	0.000		0.000		0.000				0.000	0.000		
Remarks:															
Total Cost			0.000	0.964		0.000		0.000				0.000	0.964		
Remarks:															

CLASSIFICATION:

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EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER 9513 BPAUV
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BPAUV Program Schedule

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
BPAUV Development Contract Award BPAUV Development				△																								

R-1 SHOPPING LIST - ITEM NO.

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 95 of 98)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME 9999 Congressional Adds					
COST (\$ in Millions)	Prior Years Cost	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program	
Project Cost	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000		1.400	
RDT&E Articles Qty											

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

Congressional plus-up. - Investigate development of an AN/AQS-14, AN/AQS-24 and AN/AQS-20A sensor training module for a LAN-based Surface Network Embedded Analysis and Tactical Trainer (SNEATT).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA -4	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface & Shallow Water MCM	PROJECT NUMBER AND NAME 9999 Congressional Adds

B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
9179		0.000	1.400	0.000
Surface Navy Integrated Undersea Tactical Technology				

Congressional plus-up. - Investigate development of an AN/AQS-14, AN/AQS-24 and AN/AQS-20A sensor training module for a LAN-based Surface Network Embedded Analysis and Tactical Trainer (SNEATT).

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 98 of 98)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification				DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	R-1 Item Nomenclature 0603506N / SURFACE SHIP TORPEDO DEFENSE						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	54.624	53.133	40.627	31.829	20.045	29.267	30.466
Surface Ship Torpedo Defense 0225	51.320	46.333	40.627	31.829	20.045	29.267	30.466
SLQ-25A Torpedo Countermeasure Set Upgrades 9514	3.304	0.000	0.000	0.000	0.000	0.000	0.000
Low Cost Component Development for Anti-Torpedo Torpedo 0225C	0.000	3.000	0.000	0.000	0.000	0.000	0.000
SLQ-25A Torpedo Countermeasure Improvement Program 9514C	0.000	1.700	0.000	0.000	0.000	0.000	0.000
Integrated Multi-Platform Sonar System 9799N	0.000	2.100	0.000	0.000	0.000	0.000	0.000
<p>A. Mission Description and Budget Line Justification: Project 9514 continues upgrades to the AN/SLQ-25A torpedo countermeasure system as funded by congressional adds. Project 0225 continues development of components of the AN/WSQ-11 Torpedo Defense System. The AN/WSQ-11 TDS development approach espouses an Evolutionary Acquisition strategy of providing incremental surface ship torpedo defense capability to the fleet. Two contracted DCL DEMO systems, developed in FY05-06, as well as the Anti-Torpedo Torpedo (ATT) initial EDM-1 design, will be evaluated during at-sea trials in FY06 as risk mitigation demonstrations. Results of the at-sea demonstrations will lead to an AN/WSQ-11 TDS FY07 specification development and subsequent at-sea evaluations of DCL component integration with the AN/SLQ-25A system. In FY07, Project 0225 commences development of the Common Very Lightweight Torpedo (CVLWT) design as a continuation of the ATT 6 ¼ EDM-1 design developed under the AN/WSQ-11 TDS project. A common warhead design is planned that will allow for development of the CVLWT to accommodate multi-mission applications. The development of the ATT is the first EDM-2 derivative of the CVLWT as a funded acquisition program with planned IOC FY13. The planned CVLWT acquisition strategy will also accommodate subsequent development of the Compact Rapid Attack Weapon (CRAW) to be launched from the VTUAV airframe associated with the Littoral Combat Ship or other unmanned vehicles for ASW missions as well as other mission requirements requiring a compact ASW / torpedo defense weapon. Both the CRAW and AN/WSQ-11 TDS / ATT are closely linked with the ONR FNC programs (Sea Shield FNC's) which provide advance technology inserts at key transition points in support of the planned CRAW and AN/WSQ-11 ATT and DCL schedules.</p> <p>(U) Project 9514 - FY05 Congressional Add: Completes development of AN/SLQ-25A enhanced EC-16 and littoral cable.</p> <p>(U) Project 0225C - FY06 Congressional Add: Continue ATT component design cost reduction, conduct component affordability study, and procure ATT selected afterbody components for first ATT EDM units.</p> <p>(U) Project 9514C - FY06 Congressional Add: Finalize resolution of dual tow and mutual interference issues associated with the recent AN/SLQ-25A EEC 16 performance upgrade.</p> <p>(U) Project 9799N - FY06 Congressional Add: Evaluate feasibility of employing wireless technology to coordinate exchange of torpedo defense acoustic detection and tracking information.</p>							

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603506N / SURFACE SHIP TORPEDO DEFENSE	PROJECT NUMBER AND NAME 0225 Surface Ship Torpedo Defense	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	8.185	35.526
RDT&E Articles Quantity	N/A	N/A	N/A
<u>ATT / Common Very Lightweight Torpedo (CVLWT)</u>			
FY06 - Develop CDD requirements. Initiate CVLWT warhead design.			
FY07 - Initiate EDM-2 and warhead development.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	25.003	30.750	2.600
RDT&E Articles Quantity	N/A	N/A	N/A
<u>ANTI-TORPEDO TORPEDO (ATT)</u>			
FY05 - Complete EDM-1 design. Develop 6 3/4 EDM-1 sonar array , guidance and control, propulsion components. Build first EDM-1 unit.			
FY06 - Build remaining EDM-1 units (9). Continue in water testing (CT2 and CT3) EDM-1 units and post trials analysis. Conduct Torpedo DCL integrated platform display data exchange demo.			
FY07 - Conduct CT-4 in water trial. Select CVLWT EDM-2 design and develop ATT as first derivative of CVLWT.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	25.819	7.098	1.751
RDT&E Articles Quantity	N/A	N/A	N/A
<u>TRIPWIRE</u>			
FY05 - Conduct preliminary DCL DEMO component trials (Trials 1 &2).			
FY06 - Conduct DCL DEMO final sea trials and post trial analysis.			
FY07 - Develop Tripwire sensor and DCL specifications. Conduct component trials (DD-3 & 4).			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.498	0.300	0.750
RDT&E Articles Quantity	N/A	N/A	N/A
<u>AN/WSQ-11 TDS</u>			
FY05 - Initial draft CDD requirements.			
FY06 - Complete CDD requirements.			
FY07 - Develop AN/WSQ-11 TDS system specifications.			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																																								
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603506N / SURFACE SHIP TORPEDO DEFENSE	PROJECT NUMBER AND NAME 0225 Surface Ship Torpedo Defense																																								
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Funding:</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>FY 2006 President's Budget:</td> <td style="text-align: right;">50.403</td> <td style="text-align: right;">47.039</td> <td style="text-align: right;">37.721</td> </tr> <tr> <td>FY 2007 President's Budget:</td> <td style="text-align: right;">51.320</td> <td style="text-align: right;">46.333</td> <td style="text-align: right;">40.627</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">0.917</td> <td style="text-align: right; border-top: 1px solid black;">-0.706</td> <td style="text-align: right; border-top: 1px solid black;">2.906</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 20px;">General Provisions</td> <td style="text-align: right;">-0.039</td> <td style="text-align: right;">-0.706</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td style="padding-left: 20px;">Revised rates & inflation indices</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.249</td> </tr> <tr> <td style="padding-left: 20px;">SBIR</td> <td style="text-align: right;">-1.163</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td style="padding-left: 20px;">Programmatic Changes</td> <td style="text-align: right;">2.119</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">2.657</td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">0.917</td> <td style="text-align: right; border-top: 1px solid black;">-0.706</td> <td style="text-align: right; border-top: 1px solid black;">2.906</td> </tr> </tbody> </table> <p>Schedule: See Milestone Chart</p> <p>Technical: Not Applicable</p>			Funding:	FY 2005	FY 2006	FY 2007	FY 2006 President's Budget:	50.403	47.039	37.721	FY 2007 President's Budget:	51.320	46.333	40.627	Total Adjustments	0.917	-0.706	2.906	Summary of Adjustments				General Provisions	-0.039	-0.706	0.000	Revised rates & inflation indices	0.000	0.000	0.249	SBIR	-1.163	0.000	0.000	Programmatic Changes	2.119	0.000	2.657	Subtotal	0.917	-0.706	2.906
Funding:	FY 2005	FY 2006	FY 2007																																							
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Programmatic Changes	2.119	0.000	2.657																																							
Subtotal	0.917	-0.706	2.906																																							

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603506N / SURFACE SHIP TORPEDO DEFENSE			PROJECT NUMBER AND NAME 0225 Surface Ship Torpedo Defense				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN BLI: 221300 Surface Ship Torpedo Defense - SSTD	33.144	28.393	8.404	5.796	10.050	4.575	4.687	CONT.	CONT.
WPN BLI: 311300 Surface Ship Torpedo Defense - SSTD	0.000	3.941	5.856	6.015	8.442	8.621	8.809	CONT.	CONT.
E. ACQUISITION STRATEGY:									
<p>The project develops Surface Ship Torpedo Defense (SSTD) capabilities using an evolutionary acquisition incremental development approach. The existing AN/SLQ-25A NIXIE is upgraded through ECP's performed by the Original Equipment Manufacture (OEM) and procured/ installed in the FY05 - FY09 time frame. In FY09 - FY11 components of the AN/WSQ-11 DCL design are procured for at-sea evaluation. The FY07 MS B approves the previous ATT 6 3/4 EDM-1 design as a Common Very Lightweight Torpedo (CVLWT) EDC-2 design to continue development as an Anti-Torpedo Torpedo which subsequently can also accommodate multi-missions. ATT development continues post MS C under ARL PSU as design agent with a competitive award to a single prime contractor to accomplish integration of the ARL PSU design into CVLWT LRIP builds for ATT operational testing. FY06-FY08 WPN procures SSTD acoustic decoy countermeasures for fleet use and Surface Warfare Development Group (SWDG) tactics development. FY09 - FY11 WPN provides CVLWT LRIP units for operational evaluation as ATT units.</p>									
F. MAJOR PERFORMERS:									
See R-3									

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 3)							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603506N / SURFACE SHIP TORPEDO DEFENSE			0225 Surface Ship Torpedo Defense						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												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	0.000
Remarks:												
Contractor Engineering Support												0.000
Government Engineering Support												0.000
Program Management Support	C/CPFF	EG&G Gaithersburg, Md		0.700	10/05	0.650	01/06	0.650	01/07	CONT.		0.000
Travel		PMS 415		0.100	11/04	0.150	11/05	0.150	11/06	CONT.		0.000
Transportation												0.000
SBIR Assessment												0.000
Subtotal Management			0.000	0.800		0.800		0.800		0.000	0.000	0.000
Remarks:												
Total Cost			0.000	54.624		53.133		40.627		0.000	0.000	0.000
Remarks:												

R-1 SHOPPING LIST - Item No. 37

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CLASSIFICATION:

EXHIBIT R-4, SCHEDULE PROFILE (page 1)	DATE: February 2006														
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603506N / SURFACE SHIP TORPEDO DEFENSE														
	FY 05		FY 06		FY 07		FY 08		FY 09		FY 10		FY 11		
COMMON VERY LIGHTWEIGHT TORPEDO (CVLWT) 6 3/4 FORM FACTOR	EDM-1 (10)					EDM-2 (25)					LRIP (60)				
	DESIGN COMPLETED	▲ EDM-1 (1)	△ EDM-1 (3)	△ EDM-1 (6)	In-Water Testing										
ANTI-TORPEDO TORPEDO (ATT)	SD&D PHASE					LRIP PHASE									
			△ ICD CT1-1	△ CDD CT1-2	△ CT1-3	△ CR1-4	△ MS B	△ CT2-1	△ CT2-2	△ CT2-3	△ CT2-4	△ MS C CT2-5	△ CT2-6	△ CT2-7	△ LR-1
COMPACT RAPID ATTACK WEAPON (CRAW)									△ CR2-1		△ CR2-2				△ CR2-3
TRIPWIRE COMPONENTS	DCL DEMO PHASE														
	▲ DD-1	▲ DD-2	△ DT-1	△ DT-2	△ DD-3	△ DD-4	△ DD-5			△ DD-6		△ DD-7			△ DD-8
AN/WSQ-11 SYSTEM			△ ICD												
			△ CDD	△ CDD		△ SPEC									

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603506N / SURFACE SHIP TORPEDO DEFENSE	PROJECT NUMBER AND NAME Congressional Plus-Ups

CONGRESSIONAL PLUS-UPS:

	FY 06				
0225C					
Low Cost Component Development for Anti-Torpedo Torpedo	3.000				

FY06- Congressional Plus-Up Add to continue ATT component design cost reduction, to conduct component affordability study, and to procure ATT selected afterbody components for the first ATT EDM units.

	FY 06				
9514C					
SLQ-25A Torpedo Countermeasure	1.700				

FY06- Congressional Plus-Up Add to finalize resolution of dual tow and mutual interference issues associated with the recent AN/SLQ-25A EEC 16 performance upgrade. Evaluate under the 25A ROADMAP project feasibility of integrating the AN/SLQ-25A system with a SSTD DCL subsystem.

	FY 06				
9799N					
Integrated Multi-Platform Sonar system	2.100				

FY06- Congressional Plus-Up Add to evaluate feasibility of employing wireless technology to coordinate exchange of torpedo defense acoustic detection and tracking information. Intent is to examine feasibility of linking SSTD distributed sensors data within a battle group.

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EXHIBIT R-2, RDT&E Budget Item Justification				DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04				R-1 ITEM NOMENCLATURE 0603512N - Carrier Systems Development				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		161.539	168.283	153.894	117.125	106.872	164.210	98.324
1723 - CV Launch & Recovery Systems		2.595	0.000	0.000	0.000	0.000	0.000	0.000
2208 - CVN 21		100.680	107.699	58.787	49.412	56.532	58.143	42.057
4004 - EMALS		49.499	55.780	58.438	26.175	13.286	0.000	0.000
4005 - Smart Carrier		1.818	1.804	1.773	1.781	1.772	1.762	1.838
4006 - CVN 21 Follow Ship		0.000	0.000	34.896	39.757	35.282	104.305	54.429
9349 - Aviation Ship Integration Center		3.568	0.000	0.000	0.000	0.000	0.000	0.000
9515 - Sentinel Net		1.064	0.000	0.000	0.000	0.000	0.000	0.000
9516 - Surface Ship Composite Moisture Separators		2.315	0.000	0.000	0.000	0.000	0.000	0.000
9999 - Congressional Adds		0.000	3.000	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Navy unique program addresses all technology areas associated with Navy/Marine Corps aircraft operations aboard ships. The program includes:

- (U) (1723) - Development of all systems required to provide approach and landing guidance and control, recovery, service, support and launch aircraft operating onto or from ships. Payoffs include increased safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced manning, increased aircraft service life and fleet modernization.
- (U)(2208) - Development of ship hull, mechanical, propulsion, electrical, aviation, and combat support systems, subsystems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, and operational capabilities, and to meet the requirements of existing and pending regulations and statutes critical to the operation of existing and future aircraft carriers.
- (U) (4004) - Development of an advanced technology aircraft launch system in support of the CVN 21 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 21 Class ships and could also be retrofit on existing CVNs. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability and reduced operator and maintainer workload.

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	BA-04	R-1 ITEM NOMENCLATURE 0603512N - Carrier Systems Development
<ul style="list-style-type: none"> - (U) (4005) - The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs (TOC). - (U) (4006) - Development of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 79. - (U) (9349) - The Aviation Ship Integration Center provides an environment that supports the development and conceptualization of fully integrated future aircraft carrier advanced technology design. The Center will be used to identify, test, and integrate potential design approaches and products for the CVN 21 Warfare System that are focused on reducing costs by increasing efficiencies in air capable shipbuilding programs. The Center will mitigate CVN 21 advanced technology design risk by enabling detection and resolution of potential problems early in the development cycle, thereby maximizing the Navy's return on its non-recurring design investment and enhancing transformational initiatives necessary to support the CVN 21 Warfare System. - (U) (9515) - Sentinel Net (FY05-06 Congressional Add) provides a low-risk sensor processing method that builds on the Aircraft Carrier's Tactical Support Center's (CV-TSC) Command and Control (C2) Suite to yield a harbor defense or force protection C2 capability aboard the Carriers. - (U) (9516) -Development of Composite Moisture Separators and a related manufacturing process for the CVN 21 Class Aircraft Carrier to replace the stainless steel moisture separators currently in use in NIMITZ Class Aircraft Carrier ventilation systems. The ventilation system has intake air inlets on the shell of the ship. At these inlets there currently are baffled stainless steel moisture separators that reduce the amount of entrained moisture in the air before it gets into the ventilation ducts, thus reducing the amount of corrosion of the ventilation ducts. These stainless steel moisture separators are heavy, and by converting them to a composite moisture separator, topside weight will be reduced. Reducing topside weight supports the CVN 21 Class Key Performance Parameters for Weight and Stability. - (U) (9999N) -Quips Integration with CV Tactical Support (FY06 Congressional Add) - The Quiet Interlude Processing System (QUIPS) will provide an automated data fusion system to detect, track, classify, and neutralize threats in the nearshore environment. QuiPS is state-of-the-art in algorithm development in non plane wave acoustic beamforming to detect and track surface ship and submerged contacts in very shallow water using matched phase matched field processing, as well as the normal plane wave beamformers. - (U) (9999N)-Ship Security perimeter monitoring (FY06 Congressional Add) - The Perimeter Security Monitoring System will provide a solid state millimeter-wave radar uniquely designed to provide 360-degree Ship Perimeter Protection in Port and Littoral Waters. It will provide AT-FP/Harbor Defense Sensor for Networked Connection, be metadata enabled, man-portable and is meant to move the perimeter outward. 		

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 2208 - CVN 21			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	100.680	107.699	58.787	49.412	56.532	58.143	42.057	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides for the development of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project transitions the most promising technologies from the Navy technology base, other government laboratories, and the private sector into specific advanced development efforts. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 78 procurement, including, but not limited to engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE).

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	12.794	3.531	0.000
RDT&E Articles Quantity			

- (U) Non-Nuclear Propulsion Plant Development -
 (FY05) - Completed fabrication of prototype Main Turbine Generator (MTG) and detailed design. Developed prototype qualification test plans. Initiate and complete MTG prototype qualification testing and shock test. Prepared for post-shock steam testing and prototype disassembly and inspection. Continued development of testing requirements and the identification and evaluation of testing capabilities. Continued development of inputs to the integrated product model. Continued prototyping and implementation of automated workflow for construction deliverables. Continued to integrate analysis and other required functions into product model design. Continued development of mechanical and electrical systems that interface with the propulsion plant. Follow-on testing performed: Generator testing to verify adequate margin on the exciter diode snubber design; Generator Spray Testing; and Shock extension of other MTG components and DDAM shock qualification of the turbine.

(FY06) Continue Follow-on testing: VRS/EGS voltage/frequency variation testing; Shock test of the generator and other MTG components; and Post-qualification corona testing on the prototype and on production unit generators. Continue schematic improvements. Continue Independent Over-speed Trip System (IOTS) development. Continue Technical manual development.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	78.498	98.094	54.602
RDT&E Articles Quantity			

- (U) CVN 21 Advanced Technology Design & Development – Commence and continue development and transition of technologies to support CVN 21 Key Performance Parameters (KPPs): increased sortie generation rate, further reductions in manpower, and further recovery of weight and stability service life margins. Continue design activities to integrate the new propulsion plant and Electromagnetic Aircraft Launch System, and expand the design build approach to include the whole ship, to optimize various systems and arrangements to meet KPPs, and to improve overall performance. Technologies and design efforts include, but not limited to:

(FY 05) – Developed prototypes and design life cycle management plans for high design impact technologies, (Survivability improvements, Advance Weapons Elevators, Reverse Osmosis plant, Heavy Underway Replenishment, 1100 ton AC Plant, and Plasma Arc Waste Destruction System). Continued designs and development of other technologies including, but not limited to the areas of Weapons and Material Handling, lightweight material design and manufacturing and individual component development. Supported system engineering and requirement decomposition for the Integrated Mission System including Combat System, C4I and Aviation.

(FY 06) – Construct prototypes, test and finalize integration and life cycle management for high design impact technologies. Develop prototypes and testing as necessary for other technologies. Continue to identify new technologies for later incorporation in the CVN 78 design. Continue system engineering process for the integration of the mission systems.

(FY 07) – Finalizes integration for technologies developed and prototyped in previous years to support inclusion into the CVN 78 design. Continue to identify new technologies for later incorporation in the CVN 78 design. Continue system engineering process and high level integration of the mission systems.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	9.388	6.074	4.185
RDT&E Articles Quantity			

- (U) CVN 21 - Test & Evaluation -
 (FY05) - Determined specific developmental test requirements (DT), related modeling and simulation and develop test plans. Conducted actual test events including tests on a Large Test Asset. DT-A2 events were based on CVN 78 system requirements and capabilities. DT-A2g (LTA) was planned and test was completed.

(FY06) - Continue DT-A2 events based on CVN 78 system requirements and capabilities. Items such as test articles, instrumentation, support equipment, threat representation, test targets and other expendables, operational force test support, models, simulations, test-beds, special requirements, and funding needs will be finalized and provided in TEMP 1610 Rev B (in support of the FY08 construction contract award). DT-A2g test report will be formalized and related models will be updated to reflect test results.

(FY07) - The NGNN T&E IPT will continue planning and execution of DT-A2 events and will identify, plan and begin to execute DT-B events to demonstrate that CVN 78 concepts meet required capabilities. Assess CVN 21 T&E risks by reviewing various PARM test plans and reports, identify any gaps or differences in PARM testing and determine if PARMs are meeting CVN 21 ORD requirements.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget	102.372	109.362	59.090
FY 2007 President's Budget	100.680	107.699	58.787
Total Adjustments	-1.692	-1.663	-0.303
Summary of Adjustments			
Rescissions/ General Provisions	-1.692	-1.663	
Miscellaneous			-0.303
Subtotal	-1.692	-1.663	-0.303
Schedule:			
The CVN 78 Basic Construction contract will be awarded in FY08 with delivery in FY15.			
Technical:			
Not Applicable			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 2208 - CVN 21				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Complete</u>	<u>Total Cost</u>
SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.
RDT&E:									
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.
*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program									
E. ACQUISITION STRATEGY:									
<p>The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.</p>									
F. MAJOR PERFORMERS:									
Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction									

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 2208 - CVN 21						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
CVN 21 Class												
	CPAF	NGNN	1.233	0.500	11/04	0.993	01/06	0.925	11/06	Continuing	Continuing	
	WX	NAWC AD	2.301	6.032	10/04	0.360	11/05	0.242	11/06	Continuing	Continuing	
	WX	NSWC Dahlgren	0.874	0.352	10/04	0.820	11/05	0.675	11/06	Continuing	Continuing	
	WX	NSWC CD		0.835	10/04	2.118	11/05	0.300	11/06	Continuing	Continuing	
	Various	Miscellaneous	1.500	1.069	10/04	0.244	11/05	1.243	11/06	Continuing	Continuing	
Operational Test & Evaluation	WX	COMOPTVFOR	0.448	0.600	10/04	1.539	11/05	0.800	11/06	Continuing	Continuing	
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			6.356	9.388		6.074		4.185		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost			344.337	100.680		107.699		58.787		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile																									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04										PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development										PROJECT NUMBER AND NAME PU 2208 - CVN 21								
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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			SFR △		PDR △				CDR △	DAB △	PR																	
Propulsion Plant																												
EMALS	SRR ▲	SFR ▲			PDR ▲	CDR 1 △	CDR 2 △		TRR 1 △	TRR 2 △							LRIP △											
DBR Radar Suite	CDR △																											
Advanced Arresting Gear		MS B ▲			CDR-1 △	CDR-2 △			TRR 1 △								TRR 2 △								MS C △			
Test & Evaluation Milestones																												
Development Test	◇	DT A2			◇	DT B1						◇	DT B2				◇	DT B3				◇						
Operational Test		OT B1		◇	OT B2				◇	OT B3				◇	OT B4				◇	OT B5				◇				
Contract Milestones																												
IPPD Contract																												
CP Contract									Contract Award △								Contract Award △											
Construction Contract																												
Full Funding (SCN)																												

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

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Exhibit R-4a, Schedule Detail							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT PE 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 2208 - CVN 21		
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11	
Developmental Tests DT A-2								
Advanced Arresting Gear SRR								
EMALS SDD Phase Initiate								
Dual Band Radar PDR								
CVN 21 Milestone B								
CVN 21 SRR								
Construction Preparation Contract Award			2Q					
Advanced Arresting Gear PDR								
EMALS SRR	1Q							
Developmental Tests DT A-2	1-4Q							
Dual Band Radar CDR	1Q							
Advanced Arresting Gear Milestone B	2Q							
Operational Tests OT-B1	2-3Q							
EMALS SFR	2Q							
CVN 21 SFR	3Q							
EMALSP PDR		1Q						
Advanced Arresting Gear CDR 1		2Q						
CVN 21 PDR		1Q						
Developmental Tests DT A-2		1-4Q						
AAG CDR 2		4Q						
EMALS CDR 1		3Q						
EMALS CDR 2		4Q						
Developmental Tests DT-B1			1-4Q					
Operational Tests OT-B2			1-4Q					
CVN 21 CDR			1Q					
EMALS TRR 1(HALT/HCT)			1Q					
CVN 21 DAB PR			2Q					
AAG TRR 1 (IT)			2Q					
CVN 21 Construction Contract Award				1Q				
CVN 21 SCN Full Funding				1Q				
Developmental Tests DT-B1				1-4Q				
Operational Tests OT-B3				1-4Q				
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP					1Q			
AAG TRR 2 (IT)					1Q			
Developmental Tests DT-B1					1Q			
Operational Tests OT-B4					1-4Q			
Developmental Tests DT-B2					3-4Q			
Developmental Tests DT-B2						1-4Q		
AAG LRIP						2Q		
Operational Tests OT-B5							1-4Q	
Developmental Tests DT-B3							2-4Q	

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 11 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	49.499	55.780	58.438	26.175	13.286	0.000	0.000	
RDT&E Articles Qty		1						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides for the development of an advanced technology aircraft launch system in support of the CVN 78 design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 78 and follow ships of the CVN 21 Class. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability, and reduced operator and maintainer workload.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4004 - EMALS

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	49.499	55.780	58.438
RDT&E Articles Quantity		1	

-(U) EMALS -

FY-05: Continued System Development and Demonstration phase. Conducted Functional and Systems Requirements reviews. Conducted Preliminary Design Review and initiate detailed design. Conducted follow on development testing on Program Definition and Risk Reduction phase system. Continued CVN 78 integration development. Provided management, systems engineering, test, and ship integration support.

FY-06: Continue System Development and Demonstration phase. Conducted Preliminary Design Review and initiated detailed design of shipboard representative system. Complete Critical design reviews. Initiate manufacture of shipboard representative system and procurement of dead load test articles and instrumentation. Initiate installation in the EMALS land based test facility. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support.

FY-07: Continue System Development and Demonstration phase. Continue shipboard representative system development effort. Conduct environmental, high cycle and highly accelerated life testing. Complete installation of the production representative EMALS system in the land based test facility. Initiate system integration testing. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4004 - EMALS
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget	50.600	56.630	58.538
FY 2007 President's Budget	49.499	55.780	58.438
Total Adjustments	-1.101	-0.850	-0.100
Summary of Adjustments			
Rescissions/ General Provisions	-1.101	-0.850	
Miscellaneous			-0.100
Subtotal	-1.101	-0.850	-0.100

Remarks:

Schedule:

The CVN 78 Basic Construction contract will be awarded in FY08 with delivery in FY15.

Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006																																																				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04			PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS																																																					
<p>D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Line Item No. & Name</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2005</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2006</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2007</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2008</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2009</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2010</th> <th style="text-align: right; border-bottom: 1px solid black;">FY 2011</th> <th style="text-align: right; border-bottom: 1px solid black;">Complete</th> <th style="text-align: right; border-bottom: 1px solid black;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>SCN: 200100 - Carrier Replacement Program</td> <td style="text-align: right;">623.073</td> <td style="text-align: right;">619.097</td> <td style="text-align: right;">784.143</td> <td style="text-align: right;">3,481.631</td> <td style="text-align: right;">3,858.384</td> <td style="text-align: right;">1,679.100</td> <td style="text-align: right;">541.455</td> <td style="text-align: center;">Cont.</td> <td style="text-align: center;">Cont.</td> </tr> <tr> <td colspan="10">RDT&E:</td> </tr> <tr> <td>0604567N - Ship Contract Design, Live Fire T&E</td> <td style="text-align: right;">118.644</td> <td style="text-align: right;">57.424</td> <td style="text-align: right;">72.055</td> <td style="text-align: right;">57.237</td> <td style="text-align: right;">46.151</td> <td style="text-align: right;">33.828</td> <td style="text-align: right;">87.686</td> <td style="text-align: center;">Cont.</td> <td style="text-align: center;">Cont.</td> </tr> <tr> <td>0603570N - Advanced Nuclear Power Systems</td> <td style="text-align: right;">167.951</td> <td style="text-align: right;">165.845</td> <td style="text-align: right;">174.648</td> <td style="text-align: right;">165.165</td> <td style="text-align: right;">157.045</td> <td style="text-align: right;">137.766</td> <td style="text-align: right;">109.429</td> <td style="text-align: center;">Cont.</td> <td style="text-align: center;">Cont.</td> </tr> </tbody> </table> <p>*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program</p> <p>E. ACQUISITION STRATEGY:</p> <p>The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.</p> <p>F. MAJOR PERFORMERS:</p> <p>General Atomics, San Diego, CA, EMALS Design and Development Naval Air Warfare Center, Aircraft Division, Lakehurst, NJ: EMALS Development and Test.</p>										Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Complete	Total Cost	SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.	RDT&E:										0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.	0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.
Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Complete	Total Cost																																																		
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RDT&E:																																																											
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.																																																		
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.																																																		

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 4004 - EMALS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	83.352							Continuing	Continuing	Continuing
	CPAF	General Atomics (PDRR)	82.719							Continuing	Continuing	Continuing
	CPIF	General Atomics (SDD)	16.924	41.234	11/04-8/05	39.178	01/06	36.340	11/06	Continuing	Continuing	Continuing
	WX	NAWC Lakehurst, NJ	14.912	5.207	10/04	5.521	10/06	5.631	11/06	Continuing	Continuing	Continuing
	CPAF	NGNN, VA	2.270	0.266	11/04					Continuing	Continuing	Continuing
	Various	Miscellaneous	0.000	0.577	11/04	3.952	02/06	4.182	11/06	Continuing	Continuing	Continuing
Subtotal Product Development			200.177	47.284		48.651		46.153		Continuing	Continuing	Continuing
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

R-1 SHOPPING LIST - Item No. 38

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04			PROGRAM ELEMENT PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Aircraft Launch, Recovery & Support	WX	Lakehurst NJ	6.431	2.215	10/04	7.129	10/05	12.285	11/06	Continuing	Continuing	
Subtotal T&E			6.431	2.215		7.129		12.285		Continuing	Continuing	
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Total Cost			206.608	49.499		55.780		58.438		Continuing	Continuing	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												

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EXHIBIT R4, Schedule Profile																								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04								PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development								PROJECT NUMBER AND NAME PU 4004 - EMALS												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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			SFR △		PDR △				CDR △	DAB PR △																		
Propulsion Plant																												
EMALS	SRR ▲	SFR ▲			PDR ▲	CDR 1 △	CDR 2 △		TRR 1 △	TRR 2 △							LRIP △											
DBR Radar Suite	CDR △																											
Advanced Arresting Gear		MS B ▲			CDR-1 △	CDR-2 △			TRR 1 △								TRR 2 △								MS C △			
Test & Evaluation Milestones																												
Development Test	◇	DT A2		◇					◇	DT B1		◇					◇	DT B2		◇					◇	DT B3		◇
Operational Test		OT B1		◇					◇	OT B2		◇	OT B3		◇	OT B4		◇					◇	OT B5		◇		
Contract Milestones																												
IPPD Contract																												
CP Contract									Contract Award △								Contract Award △											
Construction Contract																												
Full Funding (SCN)																												

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

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Exhibit R-4a, Schedule Detail							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT PE 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 4004 - EMALS		
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11	
Developmental Tests DT A-2								
Advanced Arresting Gear SRR								
EMALS SDD Phase Initiate								
Dual Band Radar PDR								
CVN 21 Milestone B								
CVN 21 SRR								
Construction Preparation Contract Award			2Q					
Advanced Arresting Gear PDR								
EMALS SRR	1Q							
Developmental Tests DT A-2	1-4Q							
Dual Band Radar CDR	1Q							
Advanced Arresting Gear Milestone B	2Q							
Operational Tests OT-B1	2-3Q							
EMALS SFR	2Q							
CVN 21 SFR	3Q							
EMALSP PDR		1Q						
Advanced Arresting Gear CDR 1		2Q						
CVN 21 PDR		1Q						
Developmental Tests DT A-2		1-4Q						
AAG CDR 2		4Q						
EMALS CDR 1		3Q						
EMALS CDR 2		4Q						
Developmental Tests DT-B1			1-4Q					
Operational Tests OT-B2			1-4Q					
CVN 21 CDR			1Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR			2Q					
AAG TRR 1 (IT)			2Q					
CVN 21 Construction Contract Award				1Q				
CVN 21 SCN Full Funding				1Q				
Developmental Tests DT-B1				1-4Q				
Operational Tests OT-B3				1-4Q				
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP					1Q			
AAG TRR 2 (IT)					1Q			
Developmental Tests DT-B1					1Q			
Operational Tests OT-B4					1-4Q			
Developmental Tests DT-B2					3-4Q			
Developmental Tests DT-B2						1-4Q		
AAG LRIP						2Q		
Operational Tests OT-B5							1-4Q	
Developmental Tests DT-B3							2-4Q	

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 19 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4005 - Smart Carrier			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.818	1.804	1.773	1.781	1.772	1.762	1.838
RDT&E Articles Qty		2	1	1				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs. Initial technologies include Aviation Fuels (JP-5) Automation, the Advanced Damage Control System (ADCS), Automated Material Handling Systems, Damage Control Inventory Management and Stowage System (DCIMSS), List Control, Firemain Control, Integrated Condition Assessment System, Interior Communications/Systems Monitoring Alarm Upgrades, and the Digital Video Surveillance System. Demonstration technologies include Aviation Fuels On-Board Training (OBT) System, Smart Vent, Machinery Online Monitoring, Superior Sound Technology, Flat Plane Speakers, Smart Circuit Breakers, Distilling Unit Automation, Reboiler Automation, In-line Aviation Fuels Sampling, Advanced Oil Purification System, Oil Monitoring Sensors, and Voice Interactive Display. Wireless systems, smart sensors, knowledge-based systems, automated casualty control, automated technology for workload reduction, linked smart devices, common software tools for interoperability, and self-healing network are technologies being considered for future applications. This project was previously funded under Project 42208, Future Carrier R&D.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4005 - Smart Carrier

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.818	1.804	1.773
RDT&E Articles Quantity	2	1	1

- (U) Smart Carrier - Fiscal Year 2005 efforts developed the multiple-sensor in-line fuel sampling monitoring system and completed shipboard demonstration/test of a four sensor system to evaluate the sensor group effectiveness, accuracy, reliability, and end-user response; completed software development and land based test facility as well as shipboard testing for the Aviation Fuels On-Board Training (OBT) system for subsequent implementation in USS JOHN C. STENNIS (CVN74) and USS GEORGE WASHINGTON (CVN73); completed software development and land-based test facility testing for Smart Carrier Condition-Based Maintenance Capability; and began software development for Smart Carrier Automated System Logs.

Fiscal Year 2006 efforts implement in-line fuel sampling design changes resulting from FY2005 shipboard tests into a 29 sensor engineering developmental model, including both hardware and software changes, to support final system developmental testing; completes software development and land-based test facility testing for Smart Carrier Automated System Logs and subsequent shipboard testing in USS HARRY S. TRUMAN (CVN75); and begins development of Advanced Damage Control System (ADCS) software improvements for the Advanced Fire and Smoke Sensor System (AFSSS) and the Flooding Casualty Control System (FCCS).

Fiscal Year 2007 efforts complete the system developmental testing of the in-line fuel sampling engineering developmental model; continue software development, land-based testing, and shipboard testing of ADCS software improvements for the Advanced Fire and Smoke Sensor System (AFSSS) and the Flooding Casualty Control System (FCCS) in USS THEODORE ROOSEVELT (CVN71); and initiate software development for Aviation Fuels System Electronic Valve Operator (EVO) automation.

Future efforts include Superior Sound Technology (5MC), vibration monitoring/rotating machinery diagnostic tools, and expanded condition-based maintenance for rotating machinery, all via modifications and improvements to the existing Smart Carrier hardware and software suite.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4005 - Smart Carrier		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:		1.825	1.831	1.820
FY 2007 President's Budget		1.818	1.804	1.773
Total Adjustments		-0.007	-0.027	-0.047
Summary of Adjustments				
Rescissions		-0.007	-0.027	
Miscellaneous				-0.047
Subtotal		-0.007	-0.027	-0.047
Schedule: Not Applicable				
Technical: Not Applicable				

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4005 - Smart Carrier				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
098100 Items Under \$5 million Smart Carrier (LT 140)	38.726	22.668	28.434	16.063	18.093	16.816	13.301	Cont.	154.101
E. ACQUISITION STRATEGY:									
Investigate, demonstrate, and implement available technologies to deliver a robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment to reduce workload, manpower requirements, and Total Ownership Costs (TOC).									
F. MAJOR PERFORMERS:									
Naval Sea Systems Command - Philadelphia (formerly Naval Surface Warfare Center, Carderock Division), Philadelphia, PA and Naval Air Systems Command - Lakehurst (formerly Naval Air Warfare Center, Lakehurst), Lakehurst NJ, perform software development, test and evaluation, integration and program management to include training development and integrated logistics support development. Funds are typically issued in the first fiscal quarter.									

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603512N - Carrier Systems Development				PU 4005 - Smart Carrier							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Ship Integration	WX	NAVSEA, Phil./NAVAIR Lke	0.300			0.100	11/04	0.100	11/05	0.100	11/06	Continuing	Continuing	
Ship Suitability														
Systems Engineering	CPAF	NGNN, VA	0.205											0.205
	Various	Miscellaneous	7.978											7.978
Training Development														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			8.483			0.100		0.100		0.100		0.000		8.783
Development Support														0.000
Software Development	WX	NAVSEA, Phil./NAVAIR Lke	1.928			0.818	11/04	0.854	11/05	0.773	11/06	Continuing	Continuing	
Training Development	WX	NAVSEA, Phil./NAVAIR Lke	0.100			0.080	11/04	0.050	11/05	0.080	11/06	Continuing	Continuing	
Integrated Logistics Support	WX	NAVSEA, Phil./NAVAIR Lke	0.250			0.120	11/04	0.150	11/05	0.120	11/06	Continuing	Continuing	
Configuration Management														0.000
Technical Data														0.000
GFE														0.000
Award Fees														0.000
Subtotal Support			2.278	0.000		1.018		1.054		0.973		0.000		5.323

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603512N - Carrier Systems Development				PU 4005 - Smart Carrier							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAVSEA, Phil./NAVAIR Lke	0.700			0.450	11/04	0.400	11/05	0.450	11/06	Continuing	Continuing	
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			0.700			0.450		0.400		0.450		0.000	2.000	
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	WX	NAVSEA, Phil./NAVAIR Lke	0.500			0.250	11/04	0.250	11/05	0.250	11/06	Continuing	Continuing	
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.500			0.250		0.250		0.250		0.000	1.250	
Total Cost			11.961	0.000		1.818		1.804		1.773		0.000	17.356	

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EXHIBIT R-4, Schedule Profile						DATE: February 2006																											
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT NAME AND NUMBER 0603512N - Carrier Systems Development				PROJECT NAME AND NUMBER PU 4005 - Smart Carrier																										
						FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
						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
<p>In-Line Fuel Sampling</p> <p>System Development and Carrier Demonstration Engineering Development Model</p> <p>Carrier Machinery Control Systems: <u>Software Development, Integration & Test for:</u></p> <p>Aviation Fuels Automation On-Board Training</p> <p>Condition-Based Maintenance</p> <p>Automated System Logs</p> <p>ADCS Software Improvements (AFSSS & FCCS)</p> <p>Electronic Valve Operator Automation</p> <p>Superior Sound Technology (SMC)</p> <p>Vibration Monitoring/Rotating Machinery Diagnostic Tools</p> <p>Expanded Condition-Based Maintenance</p> <p>Reboiler Automation</p> <p>Liquid Load Management</p> <p>Advanced Fire and Smoke Sensors</p>																																	

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Exhibit R-4, Schedule Profile
(Exhibit R-4, Page 38 of 46)

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 26 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	0.000	0.000	34.896	39.757	35.282	104.305	54.429	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Development and related testing of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 79. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 testing, future requirements, and technologies which did not mature in time to support the CVN 78. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 79 procurement, including, but not limited to engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	12.181
RDT&E Articles Quantity			

- **(U) CVN 21 Follow Ship Advanced Technology Design & Development:** Commence development and transition of technologies to support obsolescence and technology refresh, sortie generation rate, manpower reduction, and recovery of weight and stability service life margins. Technologies and design efforts include, but are not limited to: Enhanced Weapons / Material Movement (Advanced Storage and Retrieval System and Advanced Weapons Movement) to further reduce manpower and increase sortie generation rates; Advanced Materials (Lightweight Materials and JBD Materials) development and integration to reduce total weight and improve stability while reducing shipboard maintenance; Improved Survivability technologies (Advanced Damage Countermeasures); and Advanced Ship Self Defense technologies (Surface Ship Torpedo Defense (SSTD), Advanced Point Defense Weapons, and Advanced Force Protection.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.816
RDT&E Articles Quantity			

- **(U) CVN 21 Follow Ship Testing:** Initiate efforts to determine specific developmental test and related modeling and simulation requirements. Assess the CVN 79 hull design survivability in terms of susceptibility, vulnerability and recoverability. Initiate planning of UNDEX, AIREX, Damage Control/Fire Fighting and Recoverability modeling and simulation and plan surrogate testing for model validation. Commence CVN 79 susceptibility assessment. Commence UNDEX, AIREX, Damage Control/Fire Fighting and Recoverability modeling and simulation. Commence surrogate testing of models. Continue CVN 79 susceptibility assessment and continue initiating and validating any additional modeling deemed necessary.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	19.899
RDT&E Articles Quantity			

- (U) CVN 21 Follow Ship Total Ship Integration: The CVN 79 will incorporate advanced technologies including, but not limited to: Enhanced Weapons / Material Movement to further reduce manpower and increase sortie generation rates; Advanced Materials development and integration to reduce total weight and improve stability while reducing shipboard maintenance; Improved Survivability technologies; and Advanced Ship Self Defense technologies. These technologies support efforts to address obsolescence, technology refresh, critical survival improvements, as well as continued improvements in manpower reduction and weight savings.

CVN 79 Total Ship Integration (TSI) will be accomplished through an IPPD contract with Northrop Grumman Newport News to incorporate technology advancements into the CVN 21 baseline design. TSI efforts are focused on continued design activities that integrate and optimize systems arrangements to improve KPPs and overall performance towards ORD objectives. CVN 79 design efforts will resolve issues related to incorporation of new technologies, the development of the CVN 79 contract data package, including design drawings and specifications, and will provide required program management and logistics support.

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development	PU 4006 - CVN 21 Follow Ship

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget	0.000	0.000	78.947
FY 2007 President's Budget	0.000	0.000	34.896
Total Adjustments	0.000	0.000	-44.051
Summary of Adjustments			
Programmatic change			-43.900
Miscellaneous			-0.151
Subtotal	0.000	0.000	-44.051

Remarks:

Schedule:

The CVN 79 Basic Construction contract will be awarded in FY12.

Technical:

Not Applicable

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Complete</u>	<u>Total Cost</u>
SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.
RDT&E:									
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.

*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program

E. ACQUISITION STRATEGY:

The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

F. MAJOR PERFORMERS:

Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction
 Naval Surface Warfare Center, Carderock, MD, Technology Design & Development
 Naval Surface Warfare Center, Dahlgren, Virginia, Technology Design & Development

R-1 SHOPPING LIST - Item N:38

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development				PU 4006 - CVN 21 Follow Ship					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
Advanced Design and Development	CPAF	NGNN, VA	0.000					4.660	11/06	Continuing	Continuing	
	WX	NSWC Carderock	0.000					4.024	11/06	Continuing	Continuing	
	WX	NAWC Lakehurst	0.000					2.824	11/06	Continuing	Continuing	
	WX	NSWC Dahlgren	0.000					0.000	11/06	Continuing	Continuing	
	Various	Miscellaneous	0.000					1.447	11/06	Continuing	Continuing	
Total Ship Integration	CPAF	NGNN, VA	0.000					11.454	11/06	Continuing	Continuing	
	WX	NSWC Carderock	0.000					2.625	11/06	Continuing	Continuing	
	WX	NSWC Dahlgren	0.000					1.543	11/06	Continuing	Continuing	
	WX	NAVAIR	0.000					1.372	11/06	Continuing	Continuing	
	Various	Miscellaneous	0.000					2.131	11/06	Continuing	Continuing	
Subtotal Product Development			0.000	0.000		0.000		32.080		Continuing	Continuing	

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 4006 - CVN 21 Follow Ship						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
CVN 21 Follow Ship	CPAF	NGNN, VA	0.000					0.185	11/06	Continuing	Continuing	
	Various	Miscellaneous	0.000					0.162	11/06	Continuing	Continuing	
Operational Test & Evaluation												
CVN Follow Ship												
Live Fire Test & Evaluation												
CVN 21 Follow Ship	CPAF	NGNN, VA	0.000					0.301	11/06	Continuing	Continuing	
	WX	NSWC Carderock	0.000					0.626	11/06	Continuing	Continuing	
Test Assets	Various	Miscellaneous	0.000					1.542	11/06	Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal T&E												
			0.000	0.000		0.000		2.816		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management												
			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost												
			0.000	0.000		0.000		34.896		Continuing	Continuing	
Remarks:												

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EXHIBIT R4, Schedule Profile																									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04										PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development										PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship								
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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			SFR △		PDR △				CDR △	DAB PR △																		
Propulsion Plant																												
EMALS	SRR ▲	SFR ▲			PDR ▲	CDR 1 △	CDR 2 △		TRR 1 △	TRR 2 △							LRIP △											
DBR Radar Suite	CDR △																											
Advanced Arresting Gear		MS B ▲			CDR-1 △	CDR-2 △			TRR 1 △								TRR 2 △								MS C △			
Test & Evaluation Milestones																												
Development Test	◇	DT A2		◇					◇	DT B1		◇					◇	DT B2		◇					◇	DT B3		◇
Operational Test		◇	OT B1		◇					◇	OT B2		◇	OT B3		◇	OT B4		◇					◇	OT B5		◇	
Contract Milestones																												
IPPD Contract																												
CP Contract									Contract Award △								Contract Award △											
Construction Contract																												
Full Funding (SCN)																												

R-1 SHOPPING LIST - Item No. 38

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

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Exhibit R-4a, Schedule Detail							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT PE 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship		
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11	
Developmental Tests DT A-2								
Advanced Arresting Gear SRR								
EMALS SDD Phase Initiate								
Dual Band Radar PDR								
CVN 21 Milestone B								
CVN 21 SRR								
Construction Preparation Contract Award			2Q					
Advanced Arresting Gear PDR								
EMALS SRR	1Q							
Developmental Tests DT A-2	1-4Q							
Dual Band Radar CDR	1Q							
Advanced Arresting Gear Milestone B	2Q							
Operational Tests OT-B1	2-3Q							
EMALS SFR	2Q							
CVN 21 SFR	3Q							
EMALSP PDR		1Q						
Advanced Arresting Gear CDR 1		2Q						
CVN 21 PDR		1Q						
Developmental Tests DT A-2		1-4Q						
AAG CDR 2		4Q						
EMALS CDR 1		3Q						
EMALS CDR 2		4Q						
Developmental Tests DT-B1			1-4Q					
Operational Tests OT-B2			1-4Q					
CVN 21 CDR			1Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR			2Q					
AAG TRR 1 (IT)			2Q					
CVN 21 Construction Contract Award				1Q				
CVN 21 SCN Full Funding				1Q				
Developmental Tests DT-B1				1-4Q				
Operational Tests OT-B3				1-4Q				
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP					1Q			
AAG TRR 2 (IT)					1Q			
Developmental Tests DT-B1					1Q			
Operational Tests OT-B4					1-4Q			
Developmental Tests DT-B2					3-4Q			
Developmental Tests DT-B2						1-4Q		
AAG LRIP						2Q		
Operational Tests OT-B5							1-4Q	
Developmental Tests DT-B3							2-4Q	

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 36 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N Carrier Systems Development	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS	
CONGRESSIONAL PLUS-UPS:			
	FY 06		
9515C			
Sentinel Net	1.000		
Sentinel Net provides a low-risk sensor processing method that builds on CV-TSC's Command and Control Suite to yield a harbor defense or Force Protection C2 Capability on board Carriers.			
	FY 06		
9801N			
Quips Integration with CV Tactical Support Center	1.000		
The Quiet Interlude Processing System (QUIPS) will provide an automated data fusion system to detect, track, classify, and neutralize threats in the nearshore environment. QuiPS is state-of-the-art in algorithm development in non plane wave acoustic beamforming to detect and track surface ship and submerged contacts in very shallow water using matched phase matched field processing, as well as the normal plane wave beamformers.			
	FY 06		
9802N			
Ship Security Perimeter Moniotng Using Millimeter	1.000		
The Perimeter Security Monitoring System will provide a solid state millimeter-wave radar uniquely designed to provide 360-degree Ship Perimeter Protection in Port and Littoral Waters. It will provide AT-FP/Harbor Defense Sensor for Networked Connection, be metadata enabled, man-portable and is meant to move the perimeter outward.			

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4			R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development				
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	44.282	50.918	14.135	16.686	16.828	16.983	17.161
2465/DC/Survivability	6.062	4.201	1.900	1.890	1.902	1.887	1.937
2468/Undersea Warfare (USW)	1.636	3.396	1.276	0.000	0.000	0.000	0.000
2469/ Open Systems Architecture (OSA)	3.217	2.475	1.771	1.806	1.826	1.857	1.889
2470/Integrated Topside Design (ITD)	3.548	2.651	0.477	0.463	0.462	0.467	0.474
2471/Integrated Power Systems (IPS)	3.997	9.095	7.142	6.314	6.328	6.334	6.285
2858/MTTC/IPI	5.792	0.000	0.000	0.000	0.000	0.000	0.000
4019/Radar Upgrades	0.000	0.000	1.569	6.213	6.310	6.438	6.576
9038/Automated Maintenance Environment	2.521	0.000	0.000	0.000	0.000	0.000	0.000
9183/Electro-Magnetic Launcher	1.453	0.000	0.000	0.000	0.000	0.000	0.000
9517/Amorphous Metal Permanent Magnet Gen Set	1.453	0.000	0.000	0.000	0.000	0.000	0.000
9518/Carbon Foam	4.050	0.000	0.000	0.000	0.000	0.000	0.000
9519/ DDX Ship Systems Power Electronics Tech	1.359	0.000	0.000	0.000	0.000	0.000	0.000
9520/Galley Food Waste Disposal System	0.969	0.000	0.000	0.000	0.000	0.000	0.000
9521/Intelligent Systems Consortium Initiative	1.461	0.000	0.000	0.000	0.000	0.000	0.000
9522/Shipboard Personal Locator Beacon	2.218	0.000	0.000	0.000	0.000	0.000	0.000
9523/Shipboard Use of Alt Composition Pipes	1.639	0.000	0.000	0.000	0.000	0.000	0.000
9524/Shipboard Wireless Maintenance Assistant	2.907	0.000	0.000	0.000	0.000	0.000	0.000
9999/Undistributed RDTE,N Congressional Adds	0.000	29.100	0.000	0.000	0.000	0.000	0.000

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development	
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE funds the development of shipboard system components and technologies for the future surface combatant family of ships and focuses on the following efforts: (1) development of DD(X) specific and future surface combatant survivability and damage control/firefighting systems and features that reduce vulnerability against weapons, (2) demonstration and validation of technology through build-test-build process for surface sonar and combat system application, (3) implements modular standard open systems architecture at the total ship/system level and supports reduced manning efforts through automation, (4) develops technologies to achieve a total integrated topside design focused on DD(X) and other future surface ships, (5) supports the Integrated Power System effort that provides total ship electric power, including electric propulsion , power conversion and distribution, combat system and mission load interfaces to the electric power system and (6) future upgrades/technology insertion efforts for the Dual Band Radar (DBR) system.</p> <p>The following Congressional adds are contained in this Program Element:</p> <p>FY 05 Congressional adds-</p> <ul style="list-style-type: none"> -McConnell Technology Transition Center/Innovative Productivity, Inc (MTTC/IPI). Funds studies that allow the Navy, DoD, government, laboratories, universities, and industry to identify innovative technologies, processes and concepts that can help Navy activities and contractors, while reducing operating costs and increasing product quality . Incorporated into MTTC/IPI is the Center of Excellence for Naval Propulsors which funds the development of casting and manufacturing improvements for large Navy propellers and propulsors. -Automated Maintenance Environment (AME). Effort focuses on connecting ships in a battle group with a shore-based facility for routing to support services. -Electro-Magnetic Launcher (EML). Demonstrates the feasibility of a kinetic energy electromagnetic rail gun. -Amorphous Metal Permanent Magnet Generator. Funds conceptual and preliminary designs of an Amorphous Metal Permanent Magnet Generator Set. -Carbon Foam. Funds to explore uses for lightweight, strong, fire resistant and thermally insulating carbon foam material aboard Navy ships. -DD(X) Ship System Power Electronics Technology. Funds development and demonstration of high power switch and conversion equipment technology, manufacturing methods and processes. -Galley Food Waste Disposal System. Develops new pollution control equipment and systems that will enable Navy compliance with environmental regulations and other identified issues for disposal of shipboard food waste. -Intelligent Systems Consortium (ISC). This effort focuses on the development of intelligent shipboard electro-mechanical devices in support of the Navy's all-electric ship concept, reduces manning requirements and future sea basing needs. -Shipboard Personal Locator Beacon. This system will track and monitor the health of all personnel on board a ship and activate an alarm in the event ana individual is at risk or has become a casualty. -Shipboard Use of Alternative Composition Pipes. Facilitates the testing, evaluation and certification of alternative composition low-cost piping for use in Navy ships. -Shipboard Wireless Maintenance Assistant (SWMA). Funds the continued development of an integrated, wireless collaboration tool for Navy ship organizational maintenance personnel. <p>FY 06 Congressional Adds-</p> <ul style="list-style-type: none"> -Project 9999- Congressional Adds: \$29,100-This project consists of the following FY 06 Congressional adds: Amorphous metal permanent magnet generator, Intelligent Systems Consortium NASEA-Carderock/SHSU, Water mist fire protection systems, Flash detection system for Navy 501 shipboard engines, Alternative composition-low cost pipe for shipboard application, Carbon foam program, Electromagnetic launcher (rail gun), Integrated power distribution system for next generation all-electric ship, Smart machinery spaces system, HTS AC synchronous propulsion motor and MTTC/IPI and National Surface Treatment Center. 		

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2465/DC/Survivability		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	6.062	4.201	1.900	1.890	1.902	1.887	1.937
RDT&E Articles Qty	0	0	0	0	0	0	0

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds development of DD(X) and future surface combatant survivability and damage control (DC)/ firefighting systems and features that reduce vulnerability against weapons (e.g., missiles, mines, torpedoes) and enables effective recovery of mission capability under reduced manning conditions. Additionally, this project supports development of systems that reduce susceptibility to magnetic and acoustic influence mines. The requirements for this project are based on the need to develop affordable, balanced survivability designs that address recent wartime lessons learned and emerging and future threats.

(U) System development areas include: 1) automated degaussing control system that maintains a reduced, constant electromagnetic signature level for an extended deployment and provides on-board, real-time, tactical information on safe operating areas; 2) underwater explosion, shock isolation systems that use rafting and advanced mounts to provide increased survivability while operating in littoral environments; 3) ship design modeling and simulation program that predicts the vulnerability and recoverability response time of the ship, systems, and crew to primary and secondary weapons effects 4) advanced DC and auxiliary system architectures and control methods that enable automated isolation, reconfiguration and fire suppression actions after damage; and 5) low cost ship shock testing methods that eliminate the need for costly environmental assessments and at-sea measures.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2465/DC/Survivability
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.000	1.331	0.400
RDT&E Articles Quantity	0	0	0

(U) In FY 05, conducted live fire tests to characterize the fault response of medium voltage electrical systems to weapons effects including fragmentation and fire. In FY 06, develop fault isolation control system approaches for medium voltage electrical systems that enable bus level combat induced faults to be rapidly isolated maintaining power to combat systems. Complete development in FY 07 and transition to the DD(X) program.

In FY06, initiate a study to determine the survivability benefits of advanced, commercial electrical architectures and components including the use of solid core conductors and wireless control. Complete study in FY 07.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.300	1.290	0.900
RDT&E Articles Quantity	0	0	0

(U) In FY 05, demonstrated under live fire conditions devices that will improve network survivability by isolating network shorts generated by fire and fragments. Demonstrated the fire detection performance of commercial sensors for application in machinery spaces and magazines and transitioned to DD(X) program. In FY 06 through 07, develop wireless control approaches and architectures that significantly improve survivability and reduce installation costs through the elimination of wires and cabling. In FY 06, conduct live fire demonstration of a machinery space wireless control system for fire detection and suppression system activation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.830	0.300	0.000
RDT&E Articles Quantity	0	0	0

(U) In FY 05, conducted an underwater explosion shock test employing a DD(X) raft, prototype shock mount and representative electronic equipment to demonstrate equipment survivability and developed a low-cost, portable shock testing devices for rapidly shock qualifying commercial off the shelf (COTS) equipment; In FY 06 complete low cost testing device demonstrations. Transition to DD(X).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2465/DC/Survivability

B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.770	1.280	0.600
RDT&E Articles Quantity	0	0	0

(U) In FY 05 developed a preliminary software upgrade for the closed loop degaussing system that provides for a low signature during ship rolling conditions by compensating for eddy currents . In FY 06, demonstrate software using DDG 76, USS Higgins; finalize software in FY 07 and transition to DD(X) and LPD -17 programs.

In FY 05 through FY 07, continue development of a real-time tactical decision aid that provides safe operating areas as a function of mine threat ; continued coding in FY 05. In FY 06 complete development of initial prototype code. In FY 07 complete prototype code development and conduct shore-side fleet evaluation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.570	0.000	0.000
RDT&E Articles Quantity	0	0	0

(U) In FY 05 completed development of new weapons effect and recoverability models. Transitioned to acquisition programs.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.592	0.000	0.000
RDT&E Articles Quantity	0	0	0

(U)IN FY 05, completed conceptual development of an environmentally safe shock testing approach for conducting at-sea, or pier side ship shock trials that eliminate the need for costly environmental impact assessments and at-sea measures; conducted scaled demonstrations tests including use of innovative approaches for focusing the energy from conventional explosives in one direction.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2465/DC/Survivability

C. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	6.082	4.265	2.127
FY 2007 President's Budget:	6.062	4.201	1.900
Total Adjustments	-0.020	-0.064	-0.227

(U)Summary of Adjustments

Rescissions		-0.045	
Inflation			0.009
Other General Provisions	-0.020	-0.019	-0.004
Warfare Center Rates			-0.025
Programmatic Changes			-0.207
Subtotal	-0.020	-0.064	-0.227

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2465/DC/Survivability				
D. (U) OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604300N/ DD(X) Total Ship Sys Engineering	1,130.307	1,139.993	817.528	656.837	697.041	885.407	851.458	CONT.	CONT.
PE 211900 / SCN	304.048	706.086	2,568.111	3,054.938	2,607.342	2,701.352	2,308.481	CONT.	CONT.
 E. ACQUISITION STRATEGY:									
 F. (U) MAJOR PERFORMERS:									
(U) Government Field Activities - Naval Surface Warfare Center, Carderock, Md.									

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2465/DC/Survivability						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF	DD(X) Design Agent	1.500	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.500	1.500
Ancillary Hardware Development												
Product Development	WX	NSWC CD Bethesda, MD	18.201	5.992	12/04	4.201	12/05	1.900	12/06	CONT	CONT	
	Various	Other Contractors	5.251	0.000	N/A	0.000	N/A	0.000	N/A	5.251	5.251	
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			24.952	5.992		4.201		1.900		CONT	CONT	1.500
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 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2465/DC/Survivability						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											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	
Remarks:												
Contractor Engineering Support	GSA/FFP	Anteon Arlington, VA	0.234	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.234	
Government Engineering Support	VAR	Othe Gov't Activities	0.765	0.070	03/05	0.000	N/A	0.000	N/A	0.000	0.835	
Program Management Support	WX	NSWC CD Bethesda, MD	0.075	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.075	
Travel												
Labor (Research Personnel)	CPFF	Various	0.121	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.121	
SBIR Assessment												
Subtotal Management			1.195	0.070		0.000		0.000		0.000	1.265	
Remarks:												
Total Cost			26.147	6.062		4.201		1.900		CONT	CONT	1.500
Remarks:												

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EXHIBIT R4, Schedule Profile																DATE: February 2006																
APPROPRIATION/BUDGET / PROGRAM ELEMENT NUMBER AND NAME																PROJECT NUMBER AND NAME																
RDT&E, N / BA-4																0603513N/Shipboard System Component Development																
																2465/DC/Survivability																
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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				
Non-ACAT Engineering Milestones																																
Survivable Medium Voltage Electrical Systems	Medium Voltage Electrical System Fault Isolation System Dev												Transition to DD (X) Program																			
Automation and Controls	Survivable Control System Development																Transition to DD (X) Program															
Shock Isolation Systems	Raft Test				Transition to DD (X) Program																											
	Low Cost Testing Device						Transition to DD (X) Program																									
Eddy Current Upgrade	Control Algorithm				Demonstrations/ Rangings								Transition to LPD-17, DD (X) Programs																			
Real-Time Tactical Decision	Software Development												Transition to DD (X)/LPD 17 Programs																			
Closed Loop Deamping																	Closed Loop Deamping Software Development															
Weapons Effect Models					Transition to LPD-17, DD (X) Programs																											
Environmentally Safe Ship Shock Testing Methods					Transition to DD (X) Program																											

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Exhibit R-4a, Schedule Detail					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603513N/Shipboard System Component Development				2465/DC/Survivability		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Medium Voltage Fault Characterization Test	4Q						
Medium Voltage Control System Approaches		3Q (prelim)	2Q				
Advanced Electrical Architectures Study			4Q				
Network Short Protection Demonstration	2Q						
Commercial Sensor Demonstrations	3Q						
Wireless Control System Live Fire Demo		3Q					
Wireless Control System Architectures/ Prelim Designs			4Q (prelim)	4Q			
Electronics Space Raft Test	4Q						
Low Cost COTS Qualification Test Devices	4Q						
Low Cost COTS Qualification Test Demonstrations	4Q	3Q					
Eddy Current Compensation Control Algorithm	2Q (prelim)		4Q				
Eddy Current Demonstrations		3Q					
Tactical Decision Aid Requirements	2Q						
Tactical Decision Aid Prototype Code		3Q (prelim)	3Q				
Tactical Decision Aid Fleet Evaluation			4Q				
De-Amping System Prototype Design				2Q(prelim)	4Q		
De-Amping System Control Algorithm							4Q
Weapons Effects Model V&V							
Recoverability/ New Weapons Effects models	4Q						
Alternative Shock Test Method Scale Demonstrations	4Q						

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 11 of 55)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2468/Undersea Warfare		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	1.636	3.396	1.276	0.000	0.000	0.000	0.000
RDT&E Articles Qty	0	0	0	0	0	0	0

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

The Undersea Warfare (USW) project provides advanced development demonstration and validation of technology through a build-test-build process for potential surface sonar and combat system application. Efforts focus on resolution of technical issues associated with providing capability against the year 2010 and beyond threat with emphasis on shallow water/littoral area USW and on Demonstration and Validation (DEM/VAL) of DD(X) Integrated Undersea Warfare (IUSW-21) Advanced Development Model (ADM). The key technology areas being investigated include: (1) improvements in signal processing, (2) advanced information processing, (3) multi-sensor data fusion, (4) towed array technology, (5) hull array technology and (6) transducer technology to improve target detection and classification performance and reduce system manning requirements for anti-submarine, torpedo defence and in-stride mine avoidance. Current efforts focus on major technological and performance thrusts for DD(X) USW, which will define surface combatant USW capability for the Navy in the next century. These efforts will continue beyond DD(X) and provide improvements that apply across surface ship USW platforms.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2468/Undersea Warfare
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.463	0.791	0.114
RDT&E Articles Quantity	0	0	0

(U) IUSW-21 Risk reduction contracts/tasks - In FY 05, executed risk reduction tasks into the ADM to support the build-test-build process and the FY 07 sea tests. FY06, continue evaluation and qualification of risk reduction technologies for incorporation into FY07 sea tests. In FY07, continue executing risk reduction tasks in support of build-test-build process and FY07 sea tests.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.799	1.930	0.511
RDT&E Articles Quantity	0	0	0

(U) IUSW-21 ADM/EDM Development - Performed Integrated Peer Group (IPG) engineering reviews of IUWS-21 advanced technologies. In FY 05, completed the development and integration of IUSW-21 advanced technologies into ADM/EDM demonstration system for FY05 sea tests and continued performing IPT engineering reviews of IUSW-21 advanced technologies in support of the FY07 sea tests. In FY06, develop and integrate IUSW and Peer Review advanced technologies into ADM/EDM demonstration system for FY07 sea testing. In FY07, complete the development and integration of candidate technologies for FY07 sea test.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.374	0.675	0.651
RDT&E Articles Quantity	0	0	0

(U) In FY 05, completed equipment preparation for FY 05 sea test. Shipped and installed equipment, conducted FY 05 sea tests and collected data. In FY06, procure and prepare equipment for FY07 sea tests. In FY07, complete equipment preparation for FY07 sea test, ship and install equipment, and conduct FY07 sea tests including data collection and analysis.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2468/Undersea Warfare

C. (U)PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	1.653	3.448	1.473
FY 2007 President's Budget:	1.636	3.396	1.276
Total Adjustments	-0.017	-0.052	-0.197

(U)Summary of Adjustments

Rescissions	-0.036		
Inflation			0.006
Other General Provisions	-0.017	-0.016	-0.052
Warfare Center Rates			-0.008
Programmatic Changes			-0.143
Subtotal	-0.017	-0.052	-0.197

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDT&E, N / BA-4		0603513N/Shipboard System Component Development			2468/Undersea Warfare				
D. (U) OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604300N/ DD(X) Total Ship Sys Engineerir	1,130.307	1,139.993	817.528	656.837	697.041	885.407	851.458	CONT.	CONT.
PE 211900 / SCN	304.048	706.086	2,568.111	3,054.938	2,607.342	2,701.352	2,308.481	CONT.	CONT.
E. (U) ACQUISITION STRATEGY:									
<p>(U) In Contracting Phase I and II, DD(X) used Section 845/804 agreement authority for the efforts conducted by the DD(X) Industry Teams. Broad Agency Announcements (BAAs) were competitively awarded to further refine advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning to provide further risk mitigation for DD(X) USW activities. In Contracting Phase III, responsibility for IUSW-21 ADM/EDM development for the FY04 and FY05 sea tests was with the DD(X) Design Agent.</p>									
F. (U) MAJOR PERFORMERS:									
<p>(U) DD(X) Design Agent-Ingalls Shipbuilding Inc (ISI) (U) Government Field Activities - Naval Undersea Warfare Center, Newport, Ri .</p>									

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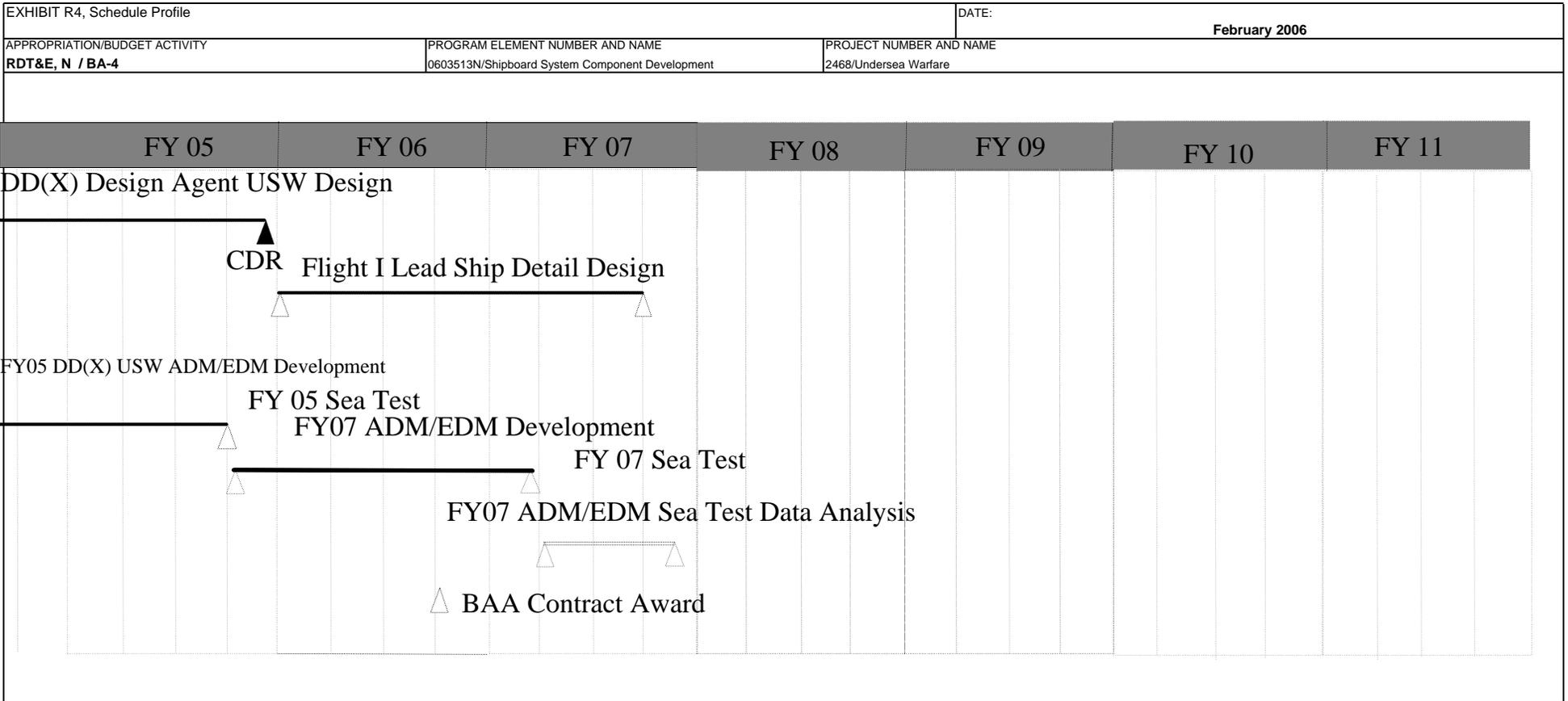
Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N / BA-4			0603513N/Shipboard System Component Development				2468/Undersea Warfare					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	11.104	0.000	N/A	0.000	N/A	0.000	N/A	0.000	11.104	11.104
	CPAF	DD(X) Design Agent	8.000	0.000	N/A	0.000	N/A	0.000	N/A	0.000	8.000	8.000
	BAA/CPFF	Competition	15.150	0.000	N/A	0.339	Various	0.171	Various	0.000	15.660	
Ancillary Hardware Development												
Systems Engineering	C/CPFF	LMC, Syracuse, NY	0.813	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.813	
	WX	Other Gov't Activities	0.460	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.460	
	C/CPFF	RSC, Newport, RI	0.827	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.827	
Licenses	BAA/CPFF	Competition	0.000	0.000	N/A	0.724	Various	0.197	Various	0.000	0.921	
Tooling												
GFE												
Award Fees												
Subtotal Product Development			36.354	0.000		1.063		0.368		0.000	37.785	19.104
Remarks:												
Development Support												
Software Development	C/CPFF	LMC, Syracuse, NY	11.589	0.000	N/A	0.000	N/A	0.000	N/A	0.000	11.589	
	C/CPFF	RSC, Newport, RI	10.316	0.000	N/A	0.000	N/A	0.000	N/A	0.000	10.316	
	WX	Other Gov't Activities	0.750	0.463	N/A	0.000	N/A	0.000	N/A	0.000	1.213	
	CPAF	DD(X) Design Agent	6.000	0.000	N/A	0.000	N/A	0.000	N/A	0.000	6.000	
Training Development	BAA/CPFF	Competition	0.000	0.000	N/A	1.350	Various	0.379	Various	0.000	1.729	
Integrated Logistics Support												
Configuration Management												
GFE												
Award Fees												
Subtotal Support			28.655	0.463		1.350		0.379		0.000	30.847	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2468/Undersea Warfare						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NUWC/N Newport, RI	7.837	0.000	N/A	0.000	N/A	0.000	N/A	0.000	7.837	
	SS/CPFF	APL/JHU Laurel, MD	1.430	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.430	
	CPAF	DD(X) Design Agent	1.000	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.000	
	WX	Other Gov't Activities	0.370	0.366	Various	0.645	Various	0.255	Various	0.000	1.636	
Operational Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			10.637	0.366		0.645		0.255		0.000	11.903	
Remarks:												
Contractor Engineering Support	various	Other Contractors	2.494	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.494	
Government Engineering Support	WX	Other Gov't Activities	8.555	0.807	1QFY05	0.338	1QFY06	0.274	1QFY07	0.000	9.974	
	SS/CPFF	Various	2.355	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.355	
Program Management Support	PD/WX	Other Gov't Activities	0.290	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.290	
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			13.694	0.807		0.338		0.274		0.000	15.113	
Remarks:												
Total Cost			89.340	1.636		3.396		1.276		0.000	95.648	19.104
Remarks:												

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R-1 SHOPPING LIST - Item No. 39

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	3.217	2.475	1.771	1.806	1.826	1.857	1.889
RDT&E Articles Qty	0	0	0	0	0	0	0

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

(U) Architectures, Interfaces & Modular Systems (AIMS): This funding supports PEO Ships implementation of modular standard open systems architecture (OSA) at the total system/ship level. These modular interfaces facilitate mission and market adaptability, technology refresh and insertion, and competition. This funding supports the market surveillance and technology and other projections, cost and logistics analyses, process development, industry partnering, demonstrations and assessments necessary to translate into total ship acquisition.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.870	0.620	0.000
RDT&E Articles Quantity	0	0	0
(U) Common Family of Ships (FOS) Business/Technical Architecture and Technology Management: FY05-06: Business Case/Architecture for common modular systems and standard interfaces.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.347	1.855	1.771
RDT&E Articles Quantity	0	0	0
(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones. A. 1QFY05: Command and Control Zone Architecture developed, FY05: Command and Control Zone Interface developed.. The following effort is a subset of the C&C Zone: 1. Supply, Maintenance and Monitoring Open Architecture (SMMOA) Interfaces: FY05: Interface developed. B. Open Offboard Vehicle Zone, FY05-07: Interfaces. C. Open Weapons/Power Projection Zone: FY 05: Architecture developed, FY06-07: Interface development D. Open Sensors Zone: FY06-FY07 Concept development.			

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2469/Open Systems Architecture (OSA)

C. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	3.430	2.512	1.997
FY 2007 President's Budget:	<u>3.217</u>	<u>2.475</u>	<u>1.771</u>
Total Adjustments	-0.213	-0.037	-0.226

(U)Summary of Adjustments

Rescissions	-0.026		
Inflation			0.008
Other General Provisions	-0.026	-0.011	-0.022
Warfare Center Rates			-0.018
Programmatic Changes	-0.187		-0.194
Subtotal	<u>-0.213</u>	<u>-0.037</u>	<u>-0.226</u>

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)
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D. (U) OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604300N/ DD(X) Total Ship Sys Engineerin	1,130.307	1,139.993	817.528	656.837	697.041	885.407	851.458	CONT.	CONT.
PE 211900 / SCN	304.048	706.086	2,568.111	3,054.938	2,607.342	2,701.352	2,308.481	CONT.	CONT.

E. ACQUISITION STRATEGY:

F. (U) MAJOR PERFORMERS:

(U) Government Field Activities- Naval Surface Warfare Center, Carderock, Md. and Naval Surface Warfare Center, Dahlgren, Va.

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2469/Open Systems Architecture (OSA)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	35.327	0.000	N/A	0.000	N/A	0.000	N/A	0.000	35.327	35.327
	WX	NSWC CD Bethesda, MD	10.023	0.000	N/A	0.000	N/A	0.000	N/A	0.000	10.023	
	Various	Other Gov't Activities	4.987	0.000	N/A	0.000	N/A	0.000	N/A	0.000	4.987	
	Various	Other Contractors	2.735	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.735	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			53.072	0.000				0.000		0.000	53.072	35.327
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	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2469/Open Systems Architecture (OSA)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational 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	
Remarks:												
Contractor Engineering Support	Various	Other Contractors	8.879	0.153	N/A	0.263	10/05	0.200	10/06	CONT	CONT	
Government Engineering Support	WX	NSWC CD Philadelphia, PA	3.763	0.000	N/A	0.000	N/A	0.000	N/A	3.763	3.763	
	WX	NSWC Carderock, Md.	2.287	2.347	10/04	1.212	10/05	0.000	10/06	CONT	CONT	
	Various	Other Gov't Activities	31.343	0.717	Various	1.000	Various	1.571	Various	CONT	CONT	
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			46.272	3.217		2.475		1.771		CONT	CONT	
Remarks:												
Total Cost			99.344	3.217		2.475		1.771		CONT	CONT	35.327
Remarks:												

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																	DATE: February 2006											
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME															
RDT&E, N / BA-4					0603513N/Shipboard System Component Development								2469/Open Systems Architecture (OSA)															
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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	LCS FLT 0 DD ▲				DD(X) CDR ▲					LCS FLT 0 Ship Deliveries ▲ ₁	LCS FLT 1 Ship DD ▲ ₂					LCS FLT 1 Ship Del ▲					LCS Beta Initial Mission Package Delivery ▲							
Common Family of Ships (FOS) Business/ Technical Architecture & Spiral Design Review	▲	Common FOS AIMS Business Case/ Integration													▲													
Technology Management Implementation	Update Plans				Update Plans																							
Open C&C Zone	▲	Interfaces			▲																							
C&C Zone: Sensors/Networks and Supply, Maintenance and Monitoring Interfaces	▲	Interfaces			▲																							
Open Offboard Vehicles Zone	▲	Interfaces													▲													
Open Weapons/Power Proj Zone	▲	Interfaces			▲					▲																		
Open Sensors Zone	▲				▲	Concept				▲	Arch				▲	Interface Development				▲								

R-1 SHOPPING LIST - Item No. 39

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

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	PE 0603513N Shipboard System Component Development				2469/ Open Systems Architecture (OSA)		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Business/Technical Architecture							
Draft Architecture for Common FOS AIMS Complete	1Q						
Common FOS AIMS Modularity Integration Complete		4Q					
Technology Management:							
Initial Database Complete							
TM Plans Issues							
Update TM plans	4Q						
Implementation							
Open Command and Control Zone							
Open C&C Zone Concept Complete							
Open C&C Zone Architecture Complete	1Q						
Open C&C Zone Interfaces Defined		1Q					
Sensor/Networks and SMMOA Risk Reduction							
Sensor/Networks and SMMOA Interface Concepts Complete							
Sensor/Networks and SMMOA Interfaces Defined		1Q					
Open Offboard Vehicles Zone:							
Open Offboard Vehicles Zone Concept Complete							
Open Offboard Vehicles Zone Architecture Complete	1Q						
Open Offboard Vehicles Zone Interfaces Defined			1Q				
Open Weapons/Power Projection Zone:							
Open Weapons Zone Concept Complete							
Open Weapons Zone Arch Complete		1Q					
Open Weapons Zone Interfaces Defined				1Q			
Open Sensors Zone:							
Open Sensors Zone Concept Complete				1Q			
Open Sensors Zone Architecture Complete					4Q		
Open Sensors Zone Interfaces Defined							4Q

R-1 SHOPPING LIST - Item No. 39

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2470/Integrated Topside Design (ITD)		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	3.548	2.651	0.477	0.463	0.462	0.467	0.474
RDT&E Articles Qty	0	0	0	0	0	0	0

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops the necessary technologies to achieve a total integrated topside design focused on DD(X) and other future surface combatant ships as well as supporting upgrades to existing ships in the Fleet. Technology focus areas include the development, enhancement, validation and verification of modeling and simulation (M&S) tools to support topside signature control, electronic warfare effectiveness, and electromagnetic engineering. This project also develops technical data to support the use of large-scale marine composites on surface combatants to facilitate topside signature control. Topside signature control and electronic warfare effectiveness M&S tools supported by this project enable Navy transformation efforts related to sea strike by facilitating the cost effective design, design approval, and Live Fire Test and Evaluation of low signature surface ships. The validated, integrated, physics-based, electromagnetic radiation (VIPER) M&S tool suite currently being developed under this project will provide the Navy with a state-of-the-art electromatgnetic engineering (EME) capability that is applicable to both new construction and existing ships in the Fleet. By providing the design community with tools able to accurately predict the optimum arrangement of topside sensors to minimize electromagnetic interference (EMI), this project enables Navy transformation efforts by facilitating FORCEnet, the connection of sensors, networks, weapons, decision aids and warriors from seabed to space. Development of marine composite technical data supports Navy transformation efforts by enabling the cost effective design of stealthy surface ship topsides that have improved corrosion control which, in turn enables optimized manning. This program is directed toward improved affordability, performance, reduced life cycle cost, reliability and maintainability, signature reduction, standardization, and weight and manning reductions for the existing and future Fleet.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2470/Integrated Topside Design (ITD)
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.512	1.120	0.202
RDT&E Articles Quantity	0	0	0

FY 05: Completed validation of V1.0 RF Coupling D&A M&S Tool; Released V12.0 RTS M&S Tool; Released V3.2 ShipIR M&S Tool.
 FY 06: Complete V2.0 RF Coupling D&A M&S Tool; Release V12.1 RTS M&S Tool; Release V3.3 ShipIR M&S Tool.
 FY 07: Complete V3.0 RF Coupling D&A M&S Tool; Release V13. RTS M&S Tool; Release V3.4 ShipIR M&S Tool.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.460	1.091	0.201
RDT&E Articles Quantity	0	0	0

FY05 Released Ver 2.0 Advanced Antenna Design and Analysis (D&A) M&S Tool ; Released V. 2.0 Frequency Selective Surface D&A M&S Tool.
 FY06: Release Ver 3.0 Advanced Antenna Design and Analysis (D&A) M&S Tool ; Release V. 3.0 Frequency Selective Surface D&A M&S Tool.
 FY07: Release Ver 4.0 Advanced Antenna Design and Analysis (D&A) M&S Tool.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.576	0.440	0.074
RDT&E Articles Quantity	0	0	0

FY05: Completed Joint Design Failure Mapping Report; Completed Structural Design and Analysis of Ship Composite Topside Structure Report; Transitioned Structural Design and Analysis of Ship Composite Topside Structure Info to ABS Naval Vessel Rules; Transitioned Flaw Criticality and Inspection Criteria for Ship Composites Info to ABS Naval Vessel Rules.
 FY06: Issue Revised Composites Joint Design Guide; Issue revised Fire safety rules and guidelines
 FY07: Update Info for ABS Naval Vessel Rules.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2470/Integrated Topside Design (ITD)

C.(U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	3.554	2.691	0.535
FY 2007 President's Budget:	<u>3.548</u>	<u>2.651</u>	<u>0.477</u>
Total Adjustments	-0.006	-0.040	-0.058

(U)Summary of Adjustments

Rescissions	-0.028	
Inflation		0.002
Other General Provisions	-0.006	-0.012
Warfare Center Rates		-0.008
Programmatic Changes		-0.052
Subtotal	<u>-0.006</u>	<u>-0.040</u>

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2470/Integrated Topside Design (ITD)					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	24.556	0.000	N/A	0.000	N/A	0.000	N/A	0.000	24.556	24.556
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			24.556	0.000		0.000		0.000		24.556	24.556	24.556
Remarks:												
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			2470/Integrated Topside Design (ITD)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational 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	GSA/FFP	Anteon Arlington, Va.	3.460	0.000	N/A	0.000	N/A	0.000	N/A	3.460	3.460	
	Various	Other Contractors	0.095	0.000	N/A	0.000	N/A	0.000	N/A	0.095	0.095	
Government Engineering Support	WX	NSWC CD Bethesda, MD	1.414	0.000	N/A	0.000	N/A	0.000	N/A	1.414	1.414	
	WX	NRL, Washington DC	2.145	0.000	N/A	0.000	N/A	0.000	N/A	2.145	2.145	
	WX	SSCSD, San Diego, CA	2.706	1.025	10/04	1.029	10/05	0.000	N/A	2.706	2.706	
	Various	Other Gov't Activities	24.867	2.523	Various	1.622	Various	0.477	Various	CONT	CONT	
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			34.687	3.548		2.651		0.477		CONT	CONT	
Remarks:												
Total Cost			59.243	3.548		2.651		0.477		CONT	CONT	24.556
Remarks:												

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CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																									DATE:			
																									February 2006			
APPROPRIATION/BUDGET ACTIVITY								PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME												
RDT&E, N / BA-4								0603513N/Shipboard System Component Development								2470/Integrated Topside Design												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Non-ACAT Engineering Milestones																												
Advanced Antenna Design and Analysis (D&A) M&S Tool																												
		▲																										
Frequency Selective Surface D&A M&S Tool																												
			▲																									
Topside RF Coupling D&A M&S Tool																												
		▲																										
RTS M&S Tool																												
Ship IR M&S Tool																												
		▲																										
Fire Safety Goals																												
Flaw Criticality and Non-Destructive Testing Goals																												
Joint Design and Validation Guides																												
Structural Design Goals																												

CLASSIFICATION:

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Exhibit R-4a, Schedule Detail					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2470/Integrated Topside Design		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Electromagnetic Engineering							
Advanced Antenna Design and Analysis (D&A) M&S Tool							
Version 2.0 Released	2Q						
Version 3.0 Released		2Q					
Version 4.0 Released			3Q				
Version 5.0 Released					3Q		
Version 6.0 Released							3Q
Frequency Selective Surface D&A M&S Tool							
Version 2.0 Released	3Q						
Version 3.0 Released		3Q					
Topside RF Coupling D&A M&S Tool							
Version 1.0 Released	2Q						
Version 2.0 Released		2Q					
Version 3.0 Released			2Q				
Version 4.0 Released					3Q		
Version 5.0 Released							3Q
Electronic Warfare Effectiveness and Topside Signatures							
Radar Target Signature M&S Tool							
Version 12.0 Released	4Q						
Version 12.1 Released		4Q					
Version 13.0 Released			4Q				
Version 14.0 Released					4Q		
ShipIR M&S Tool							
Version 3.2 Released	1Q						
Version 3.3 Released		1Q					
Version 3.4 Released			4Q				
Composite Materials							
Fire Safety Goals		4Q					
Flaw Criticality and Non Destructive Testing Goals	4Q						
Joint Design and Validation Guide	4Q	4Q					
Structural Design Goals	4Q		4Q				

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Exhibit R-2, RDTEN Budget Item Justification

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2471/Integrated Power Systems		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	3.997	9.095	7.142	6.314	6.328	6.334	6.285
RDT&E Articles Qty	0	0	0	0	0	0	0

A. (U) **MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** This project supports the Integrated Power Systems (IPS) program. IPS provides total ship electric power, including electric propulsion, power conversion and distribution, combat system and mission load interfaces to the electric power system. IPS supports multiple ship class applications for future surface ships, with DD (X), DD (X) future flight upgrades, and CG (X) being the primary ship application target. On 6 January 2000, SECNAV announced Navy intent that DD(X) be an electric drive ship with integrated power architecture. IPS reduces acquisition and operating costs of naval ships and increases military effectiveness. IPS leverages investments in technologies that will be useable by both military and commercial sectors.

- (U) IPS has the potential to revolutionize the design, construction, and operation of U.S. naval ships by using electricity as the primary energy transfer medium aboard ship. The flexibility of electric power transmission allows power generating modules with various power ratings to be connected to propulsion loads and ship service in any arrangement that supports the ship's mission at lowest overall cost. Systems engineering in IPS is focused on increasing the commonality of components used across ship types and in developing modules which will be integral to standardization, zonal system architectures, and generic shipbuilding strategies. The purpose of increased commonality is to reduce the total cost of ship ownership by using common modules composed of standard components and/or standard interfaces.

- (U) IPS addresses ship platform program goals through: reduced ship acquisition cost through integration of propulsion and ship's service prime movers; lower ship operational costs resulting from more flexible operating characteristics and more efficient components; reduced ship construction costs by allowing more extensive modular construction of power generation, distribution, and loads; improved ship survivability and reduced vulnerability through increased arrangement flexibility and improved electrical system survivability; reduced manning through improved power management systems and reduced on-board maintenance requirements; improved ship signature characteristics; improved design adaptability to meet future requirements of multiple ship types or missions; integrating power management and protection by fully utilizing the power electronics in the system to perform fault protection as well as power conversion and load management functions; simplified technology insertion which allows new technologies to be installed within IPS much less expensively than presently possible; and, reduced machinery system acquisition costs through utilization of commercially shared technologies and components.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2471/Integrated Power Systems
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.053	6.237	5.069
RDT&E Articles Quantity	0	0	0

System Development: Continue to improve baseline power system performance by performing analysis, modeling and simulation, life cycle cost analysis, producibility studies, module development, ship integration, architecture design, ship electric architectures and high power weapons systems requirements, and related efforts. Evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include fuel cells, high-energy weapons, high power radars, and advanced power electronics. Perform preliminary and detailed design of high-speed generators.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.644	2.258	1.473
RDT&E Articles Quantity	0	0	0

System Test: Conduct Integrated Fight through Power (IFTP) testing at NSWCCD, Philadelphia PA. Completed integration of IFTP and DDX IPS test sites. Mitigate potential risks associated with a fielded IPS system to reduce ship's signature, improve survivability and efficiency by fabricating components, inserting into the IPS test site or an appropriate test platform. Conduct demonstrations to maintain and develop the critical engineering capability and capacity to insert future high power weapon systems (radars, lasers and electromagnetic launch weapons) into DDX and future ship classes including CGX. Conduct demonstrations to show improved performance and potential to reduce combat system costs.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.300	0.600	0.600
RDT&E Articles Quantity	0	0	0

Platform Specific: Develop IPS configurations in support of all future surface ship programs. Develop/modify IPS ship configuration documentation including concepts of operations, System Level Description/Requirements, and module performance specifications as necessary to support power system requirements for TAOE (X) and LHAR (X), MPF future, and COBRA JUDY. Improve ship power system smart product model to support cost/performance tradeoffs of alternative IPS ship configurations and evaluation of emerging electric power system and component technologies.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2471/Integrated Power Systems
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C. PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	4.091	9.234	8.496
FY 2007 President's Budget:	3.997	9.095	7.142
Total Adjustments	-0.094	-0.139	-1.354

(U) Summary of Adjustments

Rescissions	-0.097		
Inflation			0.034
Other General Provisions	-0.094	-0.042	-0.55
Warfare Center Rates			-0.011
Programmatic Changes			-0.827
Subtotal	-0.094	-0.139	-1.354

Schedule:

Not Applicable

Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2471/Integrated Power Systems			
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604300N/ DD(X) Total Ship Sys Engineerin	1,130.307	1,139.993	817.528	656.837	697.041	885.407	851.458	CONT.	CONT.
PE 211900 / SCN	304.048	706.086	2,568.111	3,054.938	2,607.342	2,701.352	2,308.481	CONT.	CONT.
E. (U)ACQUISITION STRATEGY:									
(U) IPS is a candidate system for DD(X) and all other future surface ships.									
F. (U)MAJOR PERFORMERS:									
(U) IPS DD(X) Design Agent, Ingalls Shipbuilding linc. General Atomicms and DRS Power and Controls Technologies Inc., IPS IFTP contractors.									

R-1 SHOPPING LIST - Item No. 39

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4				0603513N/Shipboard System Component Development			2471/Integrated Power Systems					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed M Syracuse, NY	23.572	0.000	N/A	0.000	N/A	0.000	N/A	0.000	23.572	23.572
	Sec845/804	DD (X) Industry Teams	66.661	0.000	N/A	0.000	N/A	0.000	N/A	0.000	66.661	66.661
	CPAF	DD (X) Design Agent	154.500	0.000	N/A	0.000	N/A	0.000	N/A	0.000	154.500	154.500
	US/UK MOU	DERA, UK	1.350	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.350	1.350
	Sec845/804	IFTP Teams	52.482	1.000	10/04	0.400	10/05	0.200	10/06	CONT	CONT	
	C/CPAF	Anteon, Corp. Fairfax, VA	1.459	1.844	10/04	1.935	10/05	1.324	10/06	CONT	CONT	
	WX	NSWCCD Philadelphia, PA	24.387	0.278	10/04	0.531	10/05	0.400	10/06	CONT	CONT	
	WX	NSWCCD Dahlgren, Va.	2.806	0.020	10/04	0.000	N/A	0.000	N/A	0.000	2.826	
	Various	Other Contractors	10.053	0.000	N/A	0.100	10/05	0.100	10/06	CONT	CONT	
	Various	Other Govt Activities	1.895	0.000	N/A	0.100	10/05	0.100	10/06	CONT	CONT	
	C/CPAF	RS TD, TBD	0.000	0.000	N/A	5.068	1Q/05	4.507	10/06	CONT	CONT	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees	C/CPAF	Anteon, Corp. Fairfax, VA	0.055	0.054	07/05	0.111	3Q/06	0.076	3Q/07	CONT	CONT	
Subtotal Product Development			339.220	3.196		8.245		6.707		CONT	CONT	246.083
Remarks:												
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
GFE												
Award Fees												
Subtotal Support			0.000	0.000				0.000		0.000	0.000	0.000
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDTE&E, N / BA-4			0603513N/Shipboard System Component Development			2471/Integrated Power Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC CD Philadelphia, PA	17.976	0.801	10/04	0.820	10/05	0.405	10/06	CONT	CONT	
Operational Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			17.976	0.801		0.820		0.405		CONT	CONT	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	Various	Various	0.574	0.000	N/A	0.030	10/05	0.030	10/06	CONT	CONT	
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.574	0.000		0.030		0.030		CONT	CONT	
Remarks:												
Total Cost			357.770	3.997		9.095		7.142		CONT	CONT	246.803
Remarks:												

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CLASSIFICATION:

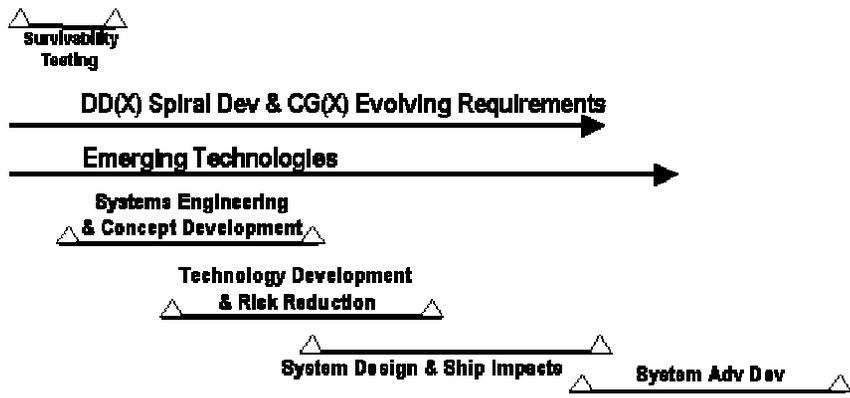
EXHIBIT R4, Schedule Profile		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2471/Integrated Power Systems



IPS Development

***Integrated Fight
Through Power***

***DD(X) Spiral Dev
& CG(X) Support***



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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 4019/Radar Upgrades		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	0.000	0.000	1.569	6.213	6.310	6.438	6.576
RDT&E Articles Qty	0	0	0	0	0	0	0

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Radar Upgrades will fund future upgrades/technology insertion efforts for the Multi-Function Radar (MFR)/Volume Search Radar (VSR)/Dual Band Radar (DBR) suite. Upgrades and technology inserts are required to maintain the level of force protection needed for ship defense against all threats envisioned in the littoral environment. The upgrades will include all aspects of the radar system/subsystems, including hardware and software. Specific subsystem areas include the Array, T/R module, Receiver/Exciter, Signal Data Processor and power/cooling systems.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 4019/Radar Upgrades
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.679
RDT&E Articles Quantity	0	0	0

Radar Upgrades and Technology Insertion for the MFR/VSР/DBR hardware and software. Commence Radar Upgrades studies and analysis in FY 07.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.790
RDT&E Articles Quantity	0	0	0

Government Engineering Services and Program Management support for radar upgrades and technology insertion of the MFR/VSР/DBR radars. Perform oversight and assessment of efforts associated with this phase of the program.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.100
RDT&E Articles Quantity	0	0	0

Provide Program Management in support of radar upgrades and technology insertion.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 4019/Radar Upgrades

C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget:	0.000	0.000	1.792
FY 2007 President's Budget:	0.000	0.000	1.569
Total Adjustments	0.000	0.000	-0.223

(U)Summary of Adjustments

Rescissions			
Inflation			0.007
Other General Provisions			-0.047
Warfare Center Rates			-0.009
Programmatic Changes			-0.174
Subtotal	0.000	0.000	-0.223

Schedule:

Not Applicable

Technical:

Not Applicable

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 4019/Radar Upgrades			
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0604300N/ DD(X) Total Ship Sys Engineerin	1,130.307	1,139.993	817.528	656.837	697.041	885.407	851.458	CONT.	CONT.
PE 211900 / SCN	304.048	706.086	2,568.111	3,054.938	2,607.342	2,701.352	2,308.481	CONT.	CONT.
 E. (U)ACQUISITION STRATEGY:									
 F. (U)MAJOR PERFORMERS:									
(U) Northrop Grumman Ship Systems, Raytheon and Lockheed Martin.									

R-1 SHOPPING LIST - Item No. 39

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603513N/Shipboard System Component Development			4019/Radar Upgrades						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Systems Engineering	C/CPAF	DD(X) Design Agent	0.000	0.000	N/A	0.000	N/A	0.679	1QFY07	CONT	CONT	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.000		0.000		0.679		CONT	CONT	
Remarks:												
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 39

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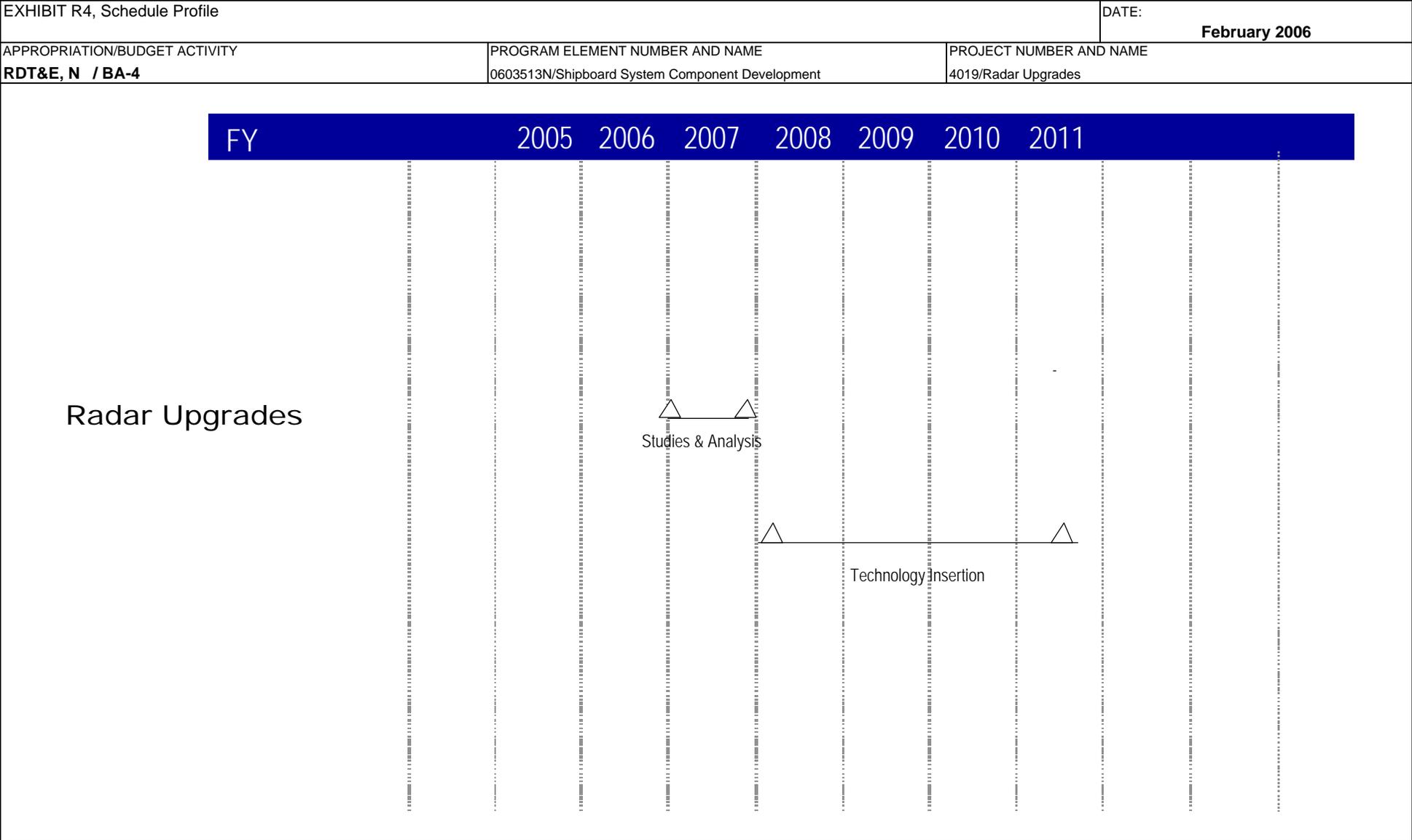
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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDTE&E, N / BA-4			0603513N/Shipboard System Component Development				4019/Radar Upgrades					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000			0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WX	Other Gov't Activities	0.000	0.000	N/A	0.000	N/A	0.790	1QFY07	CONT	CONT	
Program Management Support	C/CPFF	Various	0.000	0.000	N/A	0.000	N/A	0.100	1QFY07	CONT	CONT	
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.890		CONT	CONT	
Remarks:												
Total Cost			0.000	0.000		0.000		1.569		CONT	CONT	
Remarks:												

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CLASSIFICATION:



R-1 SHOPPING LIST - Item No. 39

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 9999/ Congressional Plus-Ups : VARIOUS
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CONGRESSIONAL PLUS-UPS:

	FY 06			
9183C				
Electromagnetic launcher (rail gun)	2.950			

(U) Funding of FY 06 Electromagnetic Launcher (rail gun), Congressional add.

	FY 06			
9517C				
Amorphous metal permanent magnet generator	1.000			

(U) Funding of FY 06 Amorphous metal permanent magnet generator, Congressional add.

	FY 06			
9518C				
Carbon foam program	2.000			

(U) Funding of FY 06 Carbon Foam program, Congressional add.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 9999/ Congressional Plus-Ups : VARIOUS
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CONGRESSIONAL PLUS-UPS:

	FY 06			
9521C				
Intelligent Systems Consortium NAVSEA-Carderock	1.000			

(U) Funding of FY 06 Intelligent Systems Consortium NAVSEA-Carderock/SHSU, Congressional add.

	FY 06			
9523C				
Alternative composition, low cost pipe for shipboard	1.700			

(U) Funding for FY 06 Alternative composition, low cost pipe for shipboard applications, Congressional add.

	FY 06			
9803N				
Flash detection system for NAVY 501 Shipboard eng	1.500			

(U) Funding for FY 06 Flash detection system for Navy 501 shipboard engines, Congressional add.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9804N				
HTS AC synchronous propulsion motor	4.000			

Funding for FY 06 HTS AC synchronous propulsion motor, Congressional add.

	FY 06			
9805N				
Integr power distribution sys for next gen all-elec shp	3.000			

Funding for FY 06 Integrated power distribution system for next generation all electric ship, Congressional add.

	FY 06			
9806N				
MTTC/IPI and National Surface Treatment Center	7.000			

Funding for FY 06 MTTC/IPI and National Surface Treatment Center, Congressional add.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 9999/ Congressional Plus-Ups : VARIOUS
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CONGRESSIONAL PLUS-UPS:

	FY 06			
9807N				
Smart machinery spaces system	3.950			

Funding for FY 06 Smart machinery spaces system, Congressional add.

	FY 06			
9808N				
Water mist fire protection systems	1.000			

Funding for FY 06 Water mist fire protection systems, Congressional add.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION BA-4				R-1 ITEM NOMENCLATURE 0603542N/Radiological Controls			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost							
Project Unit 1830/RADIAC Development	0.935	1.818	1.901	1.711	1.237	1.027	1.071
RDT&E Articles Qty	5	25	20	0	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Mission: The Radiation Detection, Indication and Computation (RADIAC) Program is responsible for providing radiation monitoring instruments that detect and measure radiation in accordance with the provisions of Title 10 of the Code of Federal Regulations (10CFR). These instruments are used on all vessels afloat and at every shore installation in order to ensure the safety of personnel and the environment. RADIACs are also required after an act of terrorism or war that involves nuclear material in order to enable continuing warfighting ability.

Justification: Many RADIAC instruments and dosimetry systems are decades old and approaching the end of their useful lives. In some cases the equipment and replacement parts are no longer manufactured, making the equipment logistically unsupportable. In other cases increasing failure rates due to age make replacements an economic efficiency improvement. In many cases a technology refresh will make both economic sense and provide increased operational capabilities.

Multi-Function RADIAC (MFR): This instrument replaces 16 families of obsolescent equipment to provide increased capability at what will be significantly lower operating costs once the MFR Control Unit and its entire complement of probes have been developed. The Control Unit and one probe are currently being fielded, but in order to achieve the full design functionality of the MFR, several probes that will detect various other types of radiation (neutron, radiography, trans-uranic X-ray, pulsed x-ray, universal) must yet be developed. Training simulators.

Naval Dosimetry System (NDS): The NDS, or personnel dosimetry system, is being developed to support routine operations and maintenance of Navy systems involving occupational exposure to radiation on nuclear ships, nuclear maintenance facilities, hospitals, weapons, and in other radiological environments. A new system is needed to replace the current CP-1112 and DT-526 system, which is approaching the end of its useful life due to increasing failure rates and the non-availability of replacement parts.

A Casualty Dosimetry System (CDS) is needed to support continuing Fleet operations in the event of an act of terrorism or war involving nuclear materials. The current CDS that consists of the CP-95 Reader and DT-60 Dosimeter is at the end of its useful life. The readers are no longer logistically supported and only cannibalization is available to restore non-operational units.

A replacement for the AN/PDR-65 Ship Board Monitoring System must be developed.

The IM-239/WDQ Air Particle Detector (APD) and the HD-732, HD-1150 and HD-1151 Air Particle Samplers (APS) are obsolescent and will be replaced with a single unit.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603542N/Radiological Controls	PROJECT NUMBER AND NAME 1830/RADIAC Development

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.722	0.726	0.498
RDT&E Articles Quantity	5	20	10

Continue Multi-Function RADIAC (MFR) development and testing of prototype units for Frisker, Neutron, Radiography, Transuranic X-ray and Universal Probes, Training Simulators and for software development to enable multiple automated calibration of MFR components. Articles are prototypes for evaluation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.113		
RDT&E Articles Quantity	0		

Continue development of a personnel dosimetry system for the Navy Nuclear Propulsion Program. Articles are prototypes for evaluation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.100		
RDT&E Articles Quantity	0		

Continue development of a Casualty Dosimetry System. Articles are prototypes for evaluation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603542N/Radiological Controls	PROJECT NUMBER AND NAME 1830/RADIAC Development

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.194	0.241
RDT&E Articles Quantity			5

Develop replacement for mast-mounted AN/PDR-65. Articles are prototypes for evaluation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.898	1.162
RDT&E Articles Quantity		5	5

Air Particle Detector (APD) development. Articles are prototypes for evaluation.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			
RDT&E Articles Quantity			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603542N/Radiological Controls	1830/RADIAC Development		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 06 Pres Bud Controls)		0.938	1.845	1.933
Current BES/President's Budget: (FY07 Pres BudControls)		0.935	1.818	1.901
Total Adjustments		-0.003	-0.027	-0.032
Summary of Adjustments				
Other General Provisions		-0.003	-0.027	0.032
Subtotal		-0.003	-0.027	0.032
Schedule:				
Additional development is required on the Casualty Dosimetry System and the Multi-Function RADIACb(MFR) Frisker Probe based on the initial prototype evaluation.				
Technical:				
The scope of development of the Naval Dosimetry System has been expanded to include evaluation of a secondary personnel dosimetry system for shipboard use.				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603542N/Radiological Controls			PROJECT NUMBER AND NAME 1830/RADIAC Development				
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	
OPN BLI 292000 RADIAC	12.401	13.053	10.373	10.720	10.365	9.498	9.730	CONT.	CONT.	
E. ACQUISITION STRATEGY: *										
Development efforts are being focused on evaluation, modification (as required to meet operational requirements) and adaptation of commercial-off-the-shelf (COTS) technology in order to minimize total ownership costs. To the maximum extent possible new contracts are targeted for fixed price efforts to control development cost.										
F. MAJOR PERFORMERS: **										
NSWC Carderock. Science & Technology Agent, Technical Direction Agent and In-Service Engineering Assistance. Science Applications International Corporation (SAIC). Multi-Function RADIAC Probe development, multiple awards.										
* Not required for Budget Activities 1,2,3, and 6 ** Required for DON and OSD submit only.										

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603542N/Radiological Controls			1830/RADIAC Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/FP	Various	10.042			0.375	03/05	0.824	05/06	0.774	05/07		12.015	
Ancillary Hardware Development													0.000	
Component Development													0.000	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering	WX	Various	1.100										1.100	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			11.142			0.375		0.824		0.774		0.000	13.115	
Remarks:														
Development Support	WX	NSWC Carderock	1.685			0.290	10/04	0.400	10/05	0.410	10/06		2.785	
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			1.685			0.290		0.400		0.410		0.000	2.785	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603542N/Radiological Controls			1830/RADIAC Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	SPAWARSYSCEN Chasn.	4.355			0.153	10/04	0.286	10/05	0.312	10/06		5.106	
Operational Test & Evaluation	WX	Various	0.329										0.329	
Live Fire Test & Evaluation													0.000	
Test Assets													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			4.684			0.153		0.286		0.312		0.000	5.435	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support	WX	NSWC Carderock	5.045										5.045	
Program Management Support	WX	NSWC Carderock	5.269			0.107	10/04	0.298	10/05	0.305	10/06		5.979	
Travel			0.335			0.010	10/04	0.010	10/05	0.100	10/06		0.455	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			10.649			0.117		0.308		0.405		0.000	11.479	
Remarks:														
Total Cost			28.160	0.000		0.935		1.818		1.901		0.000	32.814	
Remarks:														

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /					R-1 ITEM NOMENCLATURE PE 0603553N Surface ASW/1704 ASW Advanced Development			
BA4								
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		19.552	23.433	38.696	42.284	45.622	55.026	55.380
ASW Advanced Development/1704		17.225	17.083	38.696	42.284	45.622	55.026	55.380
Surface Vessel Torpedo Tube - Airbag Tech/9185		1.357	0.000	0.000	0.000	0.000	0.000	0.000
Surface Ship Combat System Warfighting Enhancement/9525		0.970	0.000	0.000	0.000	0.000	0.000	0.000
9999N/Congressional Adds		0.000	6.350	0.000	0.000	0.000	0.000	0.000
Defense Emergency Response Funds (DERF) Funds: N/A								
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
<p>The Anti Submarine Warfare (ASW) Advanced Development project provides advanced development demonstration and validation of technology for potential surface sonar and combat system applications. Efforts focus on resolution of technical issues associated with providing capability against the Year 2005 and beyond threat with emphasis on shallow water/littoral area and deep water Undersea Warfare (USW) and on demonstration and validation of USW concepts and technology. Key technology areas include active sonar transmissions, advanced signal and data processing, active sonar classification, towed and hull arrays and transducer technology. Starting from FY07, the Task Force ASW initiative will include new and innovative technologies. These include design, development, integration, and testing of future Undersea Superiority Systems. These systems include distributed sensor systems, Vertical Line Array, static active buoy field, submarine countermeasures, compact rapid effect weapon, longer range radio system, multi-static sonar, and multi-sensor data fusion including multi-platform data fusion and netcentric undersea warfare concepts. This Program Element, 0603553N, has been designated to support Multi-Static Active ASW (MAASW) efforts associated with the Distant Thunder program and other emerging multi-static technologies, and the CNO's Task Force ASW initiative.</p> <p>The MAASW project conducts advanced development and testing of active multistatic acoustic concepts. The concept development is directed at providing surface ships combat groups with the capability of detection, classification, and localization of quiet threat submarines in difficult acoustic environments associated with Littoral waters. The project concentrates on the development of acoustic processor algorithms, alternative cost-effective active sources and information sharing technologies to develop a coordinated multi-static acoustic picture employing distributed sensors and active sources.</p> <p>The Task Force ASW (TF ASW) initiative is a focused effort to identify the most promising ASW technologies through a process of discovery, assessment, experimentation and analysis. TF ASW will coordinate the development of technologies which move beyond incremental or marginal improvements in ASW effectiveness. The CNO's vision of "fundamentally changing the way ASW is currently conducted to render the enemy submarine irrelevant against U.S. and coalition forces" necessitates a change in the calculus of how the US Navy conducts ASW. Central to TF ASW's achieving the CNO's vision are several innovative approaches which include using the art-of-the-technologically-possible; minimizing force-on-force; reducing the ASW end-to-end timeline; supporting rapid maneuver; developing off-board and distributed ASW detection systems; and finding innovative weapons solutions. To achieve these keys, it is essential to develop new ASW technologies and conduct at-sea experiments to prove/disprove technology concepts and collect corroborating data. The most promising technology concepts from government laboratories, university research centers, and industry are developed to the point where these technologies can be tested in at-sea experiments, with the objective of transitioning those which demonstrate exceptional capability to programs-of-record. In addition to developing and testing promising new technologies, an effective system of measuring the performance of existing and new surface ship ASW systems is essential to enable data based assessment of the capabilities and shortfalls in the performance of these systems in realistic scenarios through a Surface Ship Enhanced Measurement Program (SSEMP). By rigorously closing the feedback loop, SSEMP enables data based programmatic decision making for Surface Ship combat systems.</p>								
<p>Project Unit 9185 is authorized by Congress to develop Surface Vessel Torpedo Tube - Airbag Tech.</p> <p>Project Unit 9525 is authorized by Congress to develop Surface Ship Combat System Warfighting Enhancement.</p> <p>Project Unit 9999 is comprised of FY 06 Congressional Adds for Improved Surface Vessel Torpedo Launcher, Automated Readiness Measurement System, Continuous Active Sonar and Medium Offboard Distributed Acoustic Sensors.</p>								

R-1 SHOPPING LIST - Item No.

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 1 of 10)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD RDT&E N/BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME 1704 ASW Advanced Development

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishments/Effort/Subtotal Cost	17.225	17.083	38.696
RDT&E Articles Quantity			

MAASW/Distant Thunder - Migrated 2 of 3 key elements of processor to open systems architecture to support transition to SQQ-89 A(V)15 combat system. Transitioned the development environment for these software engines to an open systems architecture. Conducted at-sea testing and analyzed data collected to support processor improvement. Developed and began implementation of hardware technology refresh strategy. Obtained flight certification for P-3 AIP aircraft. FY05-FY07 plans include completing transition of remaining processor elements to opens systems architecture, completing hardware technology refresh, continuing spiral development of processor algorithms, developing improved shipboard mission planning tools (TACAID Play Book), and introducing new aircraft independent source technology.

Task Force ASW - Conducted first TF ASW experiment of promising and innovative ASW technologies, collected and analyzed data, and reported results. Planned and conducted second TF ASW experiment and planned third experiment to test other promising technologies, including both industry and university affiliated research center proposed technologies. Issued an industry solicitation to obtain new technology ideas, and began strategic investment in the most promising transformational technologies derived from this solicitation. Initiated a Surface Ship Enhanced Measurement Program to begin collecting, analyzing, assessing and reporting on the performance of Surface Ship ASW systems to support results based decision making. FY05-FY07 plans include continued development and procurement of specific innovative technologies, procurement of reusable test assets for specific technology concepts, continued investment in developing and testing the highest potential industry originated technology concepts, and continuing to perform data collection, analysis, assessment and reporting of Surface Ship ASW combat system and off-board/ distributed ASW systems performance under realistic conditions.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME 1704 ASW Advanced Development	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
FY2006 President's Budget Controls	17.464	17.343	18.012
FY2007 President's Budget Controls	17.225	17.083	38.696
Totals Adjustments	-0.239	-0.260	20.684
Summary of Adjustments			
Programmatic changes			22.000
Other General Provisions	-0.239	-0.260	
Other misc. changes			-1.316
Subtotal	-0.239	-0.260	20.684
Schedule:			
N/A			
Technical:			
N/A			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME 1704 ASW Advanced Development
D. OTHER PROGRAM FUNDING SUMMARY: N/A		
E. ACQUISITION STRATEGY: * Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.		
F. MAJOR PERFORMERS: ** <u>Naval Air Warfare Center /PAX River, MD</u> – Maintain and install the two Air Multistatic Active ASW (MAASW(DT)) Rapid Deployment Kit (RDK) systems, lab test these systems and processor updates for these systems, and maintain NAVAIR authorization to install and fly this ADM system in P-3C and P-3C AIP TYCOM Aircraft. <u>Naval Undersea Warfare Center, Newport, RI</u> – Provide management support in working with various administrative and operational organizations with develop and implement teams for MAASW Distant Thunder development and evaluation. Support laboratory and at-sea testing of Distant Thunder processor algorithms for ship installations. Perform planning, execution and analysis of experiments. <u>Johns Hopkins University Applied Physics Laboratory, Laurel, MD</u> - Participate in experiment planning, execution and analysis, and lead the Surface Ship Enhanced Measurement Program (SSEMP) effort.		

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA4			PE 0603553N Surface ASW		1704 ASW Advanced Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Multistatic Sonar Development	WR	NUWC Newport	5.039	0.629	12/04	0.186	12/05	0.466	12/06	Continuous	Continuous	
Multistatic Sonar Development	WR	BATH MIN	0.021								0.021	
Multistatic Sonar Development	WR	PASCAGOULA MS	0.017								0.017	
Multistatic Sonar Development	WR	NAWC/Key West	0.010								0.010	
Multistatic Sonar Development	WR	NAWC/Pax River	1.513	0.161	12/04	0.230	12/05	0.100	12/06	Continuous	Continuous	
Multistatic Sonar Development	CPFF	BBN	3.597	0.088	12/04	0.218	11/05	0.150	11/06	Continuous	Continuous	
Multistatic Sonar Development	CPFF	APL/JHU	0.350								0.350	
Multistatic Sonar Development	RCP	FLT. Industry SUP Center	0.010								0.010	
Multistatic Sonar Development	RCP	ONR	0.472								0.472	
Various	Various	Various	0.701	0.000	02/04	0.255	01/06	0.255	01/07	Continuous	Continuous	
Subtotal Product Development			11.730	0.878		0.889		0.971		Continuous	Continuous	
Remarks:												
Developmental Test & Evaluation	WR	NUWC/Npt	2.505	0.400	11/04	0.206	11/05	0.655	11/06	Continuous	Continuous	
Developmental Test & Evaluation	WR	NAWC/Pax River	1.291	0.170	11/04	0.173	11/05	0.170	11/06	Continuous	Continuous	
Developmental Test & Evaluation	CPFF	BBN	1.023	0.300	11/04	0.250	11/05	0.300	11/06	Continuous	Continuous	
Developmental Test & Evaluation	CPFF	AAC		0.212							0.212	
Developmental Test & Evaluation	WR	SUPSHIP BATH MIN.	0.033								0.033	
Developmental Test & Evaluation	WR	NUWC/Keyport	0.933								0.933	
Developmental Test & Evaluation	WR	NSWC/Carderock, MD	0.695								0.695	
Developmental Test & Evaluation	WR	NSWC/Dahlgren, VA	0.040								0.040	
Developmental Test & Evaluation	WR	NSWC/Indian Head		0.035							0.035	
Developmental Test & Evaluation	CPFF	APL/JHU, MD	1.536								1.536	
Developmental Test & Evaluation	CPFF	ARL/UT	0.124	0.050	11/04	0.000	11/05	0.150	11/06	Continuous	Continuous	
Developmental Test & Evaluation	CPFF	Various	0.625	0.000	11/04	0.165	11/05	0.366	11/06	Continuous	Continuous	
Developmental Test & Evaluation	CPFF	Progeny, Inc.	1.217								1.217	
Developmental Test & Evaluation	CPFF	IPD	0.055								0.055	
Developmental Test & Evaluation	MIPR	U.S. ARMY/MITRE	0.000								0.000	
Developmental Test & Evaluation	WR	SPAWAR Systems Center	0.558								0.558	
Subtotal T&E			10.635	1.167		0.794		1.641		Continuous	Continuous	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA4			PE 0603553N Surface ASW		1704 ASW Advanced Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
At-Sea Test/Experiment (TFASN)	C/CPFF	JHU/APL, MD	1.100	4.000	11/04	4.000	10/05	4.000	10/06	Continuous	Continuous	
At-Sea Test/Experiment	WX	NAVSEA/NEWPORT, RI	2.300	8.000	11/04	8.000	10/05	6.684	10/06	Continuous	Continuous	
At-Sea Test/Experiment	RCP	ONR/ANTEON	0.930								0.930	
At-Sea Test/Experiment	RCP	ONR/BAE	1.800								1.800	
Enhanced Data Collection (SSEMP)	C/CPFF	JHU/APL, MD	0.000	2.000	11/04	2.000	10/05	2.000	10/06	Continuous	Continuous	
Enhanced Data Collection												
and Analysis (SSEMP)	Various	Various	2.981	0.780	11/04	1.000	10/05	1.000	10/06	Continuous	Continuous	
Technology Development	C/CPFF	Various						17.000				
Analysis & Assessment	Various	Various						5.000				
Subtotal T&E			9.111	14.780		15.000		35.684		0.000	2.730	
Remarks:												
Contractor Engineering Support												
SBIR												
Government Engineering Support												
Program Management Support	CPFF	Stanley Assoc.	0.671	0.350	01/05	0.350	01/06	0.350	01/07	Continuous	Continuous	
Program Management Support	CPFF	Anteon Corp.	0.125	0.000		0.000		0.000		Continuous	Continuous	
Travel			0.110	0.050	11/04	0.050	11/05	0.050	11/06	Continuous	Continuous	
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.906	0.400		0.400		0.400		Continuous	Continuous	
Remarks:												
Total Cost			32.382	17.225		17.083		38.696		Continuous	Continuous	
Remarks:												

CLASSIFICATION:

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EXHIBIT R4, Schedule Profile																			DATE: February 2006									
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA4					PE 0603553N Surface ASW												1704 ASW Advanced Development											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
MULTISTATIC ACTIVE ASW																												
Conduct At Sea Test (MAASW) <i>Test processor algorithm, tactics, CONOPS, and conduct crew training</i>																												
At Sea Test Analysis and System Evaluation <i>Analyze processor algorithm, tactics, CONOPS</i>																												
Processor Improvements <i>Develop improved processor algorithm, tactics, and CONOPS</i>																												
TFASW																												
Technology Development																												
<i>Develop promising technologies from government labs, university research centers, and industry</i>																												
<i>Industry Solicitation Multiphase approach to identifying the most promising technologies</i>																												
Conduct At-Sea Experiment <i>Test promising technologies</i>																												
Analyze Experimental Data <i>Evaluate performance of technologies, potential for providing capability, readiness for transition</i>																												
Surface Ship Enhanced Measurement Program																												
<i>Conduct data collection and analysis of selected exercises</i>																												

R-1 SHOPPING LIST - Item No. 44

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

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9185C	2.250			
Improved surface Vessel Torpedo Launcher				

Funds will be used to support technology insertion initiatives associated with the Surface Vessel Torpedo Tube (SVTT) MK 32 Program. These efforts will help support the Navy's surface ship platform needs and will focus specifically on the development of Advanced Surface Launcher (ASL) prototypes to production levels and completion of launcher testing. This investment will be used to upgrade the current single-mission launcher to a multi-mission launcher (ASL) resulting in the following: increase in warfighting capability, increase in operational readiness, improved personnel safety and reduced life cycle costs on both existing and future ships.

	FY 06			
9809N	0.500			
Automated Readiness Measurement System				

Funding will be used to transition Automated Readiness Measurement System (ARMS) to an automated assessment capability within the Surface Combatant Open Architecture Computing Environment. ARMS will provide a tool to support continuous certification with periodic verification of key surface force training and maintenance readiness indicators. It will be mission focused, task based, and provide specific feedback to all levels of command. Assessments will support resource allocation, training, tactical decision aids, experimentation, and other readiness improvement measures.

	FY 06			
9810N	2.600			
Continuous Active Sonar				

This Congressional Add will help accelerate concept evaluation and transition possibly via both backfit to existing ASW platforms and forward fit to emergent manned and unmanned ASW assets.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9811N	1.000			
Medium Offboard Distributed Acoustic Sensors				

Funds provided by Congress to address the utilization of offboard distributed netted systems as one part of the solution to littoral combat against quiet diesel submarines. It provides significant enhancements in capability by utilizing in buoy processing and netted sensors to allow larger sensor numbers, longer duration and over the horizon operations in contrast to existing sonobuoys.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE PE 0603559N SSGN DESIGN
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COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	19.505	23.660	25.953	0.000	0.000	0.000	0.000
SSGN Design/2413	19.505	23.660	25.953	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Covert striking power against targets ashore; the capability to establish covertly an expeditionary force on land. Working both independently and with a battle group/other ships, the OHIO Class SSGN will have the endurance and payload to prepare the battle space and to continue to project maritime power throughout a conflict.

Defense Emergency Response Funds (DERF) Funds: Not Applicable

R-1 SHOPPING LIST - Item No. 45

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4		PROJECT NUMBER AND NAME 2413 SSGN Design	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.700	0.500	0.200
RDT&E Articles Quantity			
(U) FY05 - FY07 accomplishments and plans consist of conducting component and sub-system research and development activities, ship control algorithm development and Weapons Support Systems Land Based Evaluation Facility (WSSLBEF) modifications to support developmental testing.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	16.106	22.367	25.643
RDT&E Articles Quantity			
(U) FY05 - FY 07 accomplishments and plans consist of program management, engineering management and support services, Live Fire Test and Evaluation, Test and Evaluation, safety program management, ship control system development, and hydrodynamic studies.			

R-1 SHOPPING LIST - Item No. 45

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4		PROJECT NUMBER AND NAME 2413 SSGN Design	
B. Accomplishments/Planned Program (Cont.)			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.699	0.793	0.110
RDT&E Articles Quantity			
<div style="border: 1px solid black; padding: 5px;"> <p>(U) FY05 - FY07 accomplishments and plans consist of Non-Propulsion Electronics System (NPES) development and non-recurring system development including Data Processing System (DPS), Global Command and Control System (GCCS-M), Tactical Integrated Digital System (TIDS), AN/BQN-17, NPES/AWS Wide Area Network, Common Submarine Radio Room (CSRR) and Interior Communications/Data Transfer System (IC/DTS).</p> </div>			

R-1 SHOPPING LIST - Item No. 45

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER PE 0603559N SSGN	PROJECT NUMBER AND NAME 2413 SSGN Design	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget(FY 2006 President's Budget Control):	19.777	24.020	23.797
Current BES/President's Budget: (FY 2007 President's Control):	19.505	23.660	25.953
Total Adjustments	(0.272)	(0.360)	2.156
Summary of Adjustments			
SBIR Assessment	(0.261)		
Dept of Energy Transfer	(0.015)		
Nuclear Physical Securiy (OSD-09)	0.004		
Sec. 8125: Revised Economic Assumption		(0.109)	
Congressional Action 1% Reduction		(0.251)	
NAVSEA Civilian Personnel Fund			(0.120)
East Coast TLAM Flight			2.300
Contract Support Reduction			(0.092)
NWCF Civpers Efficiencies			(0.065)
N7 Respread of Contractor Support			(0.019)
Inflation			0.115
CIVPERS Pay Raise Rate			0.037
Subtotal	(0.272)	(0.360)	2.156
Schedule:			
Not applicable			
Technical:			
Not applicable			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4			PROGRAM ELEMENT NUMBER AND NAME PE 0603559N SSGN			PROJECT NUMBER AND NAME 2413 SSGN Design			
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
(U)BLI 201700 /SSGN CONVERSION SCN	514.739	282.551	0.000	0.000	0.000	0.000	0.000	0.000	797.290
E. ACQUISITION STRATEGY:									
(U) To refuel, overhaul, convert and deliver four (4) Trident Submarines into land attack strike and Special Operating Force platforms. The SSGN program will utilize a streamlined acquisition approach that was approved by USD (AT&L) January 2002. Due to the low technical risk of the SSGN program, the SSGN program proceeded directly to Milestone C which was approved on 5 December 2002.									
F. MAJOR PERFORMERS:									
Perot Systems Government Services, Alexandria, Virginia: Technical support and program management support. Electric Boat, Groton, Connecticut: Conversion design studies. NSWC Carderock, Bethesda, Maryland: Hydrodynamic studies, safety program management, ship control system development, T&E , Systems Integration Team (SIT) support, MAC design. NUWC Newport, Newport, Rhode Island: Engineering support and NPES design Northrup Grumman Marine Systems, Sunnyvale, CA.: MAC DEM/VAL General Dynamics Advanced Information Systems, Pittsfield, MA: AWCS Naval Warfare Assessment Station, Corona, CA.: MAC Launcher support									

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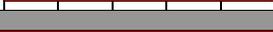
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RD&E,N/BA-4			PE 0603559N SSGN				2413 SSGN Design							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract		
Developmental Test & Evaluation	WX	NSWC, Carderock, MD	0.257	1.876	Oct-04	3.348	Oct-05	2.418	Oct-06	0.000	7.899	N/A		
Developmental Test & Evaluation	WX	NUWC, Newport, RI	2.012	0.873	Oct-04	3.134	Oct-05	2.683	Oct-06	0.000	8.702	N/A		
Developmental Test & Evaluation	RC/WR	NAVAIR Patuxent River, MD	0.080	0.000	Oct-04	0.200	Oct-05	0.000	Oct-06	0.000	0.280	N/A		
Live Fire Test & Evaluation	WX	NSWC, Carderock, MD	1.810	0.522	Oct-04	0.770	Oct-05	1.050	Oct-06	0.000	4.152	N/A		
Operational Test & Evaluation	WX	COMOPTEVFOR	0.335	0.318	Oct-04	0.178	Oct-05	3.487	Oct-06	0.000	4.318	N/A		
Operational Test & Evaluation	WX	NUWC, Newport, RI	10.957	1.712	Oct-04	1.200	Oct-05	0.000	Oct-06	0.000	13.869	N/A		
Operational Test & Evaluation	WX	NAVAIR Patuxent River, MD	0.036	1.105	Oct-04	3.550	Oct-05	11.300	Oct-06	0.000	15.991	N/A		
Miscellaneous	Various	Various	0.189	0.249	Various	0.230	Various	0.110	Various	0.000	0.778	N/A		
Subtotal T&E			15.676	6.655		12.610		21.048		0.000	55.989			
Remarks:														
Contractor Engineering Support	C/MAC	Various	9.132	2.412	Nov-04	2.198	Feb-05	1.832	Nov-05	0.000	15.573	15.573		
Government Engineering Support														
Program Management Support	Various	Various	1.636	0.109	N/A	0.000	N/A	0.000	N/A	0.000	1.745	1.745		
Labor (Research Personnel)														
Overhead														
Subtotal Management			10.768	2.521		2.198		1.832		0.000	17.318			
Remarks:														
Total Cost			267.463	19.505		23.660		25.953		0.000		0.000	336.580	

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: FEBRUARY 2006																											
APPROPRIATION/BUDGET ACTIVITY										PROJECT NUMBER AND NAME																			
RDT&E, N/BA4										F2413 SSGN Design																			
Fiscal Year	2005				2006				2007				2008				2009				2010				2011				
	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 C												IOC 				FOCOC 												
Design/Development	 SSGN DESIGN DETAIL																												
ERO/Conversion Availabilities	 Conversion				 Conversion				 Conversion				 Conversion																
Test & Evaluation Milestones	 DT-C-1				 DT-C-2				 DT-C-3				 TECHEVAL				 DT-C-4												
Operational Testing	 OT-C-1												 OPEVAL				 OT-C-2												
Live Fire Testing	 Component Shock Qual.												 TSS Test																

R-1 SHOPPING LIST - Item No. 44

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

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, NBA4		PROJECT NUMBER AND NAME F2413 SSGN Design					
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Concept and Design Studies							
Pre-SDD Activities							
Milestone C (MS C)							
SSGN Detail Design	1Q						
Developmental Testing (DT-C-1)	1Q-2Q						
726 ERO	1Q-4Q	1Q					
726 Conversion	1Q-4Q	1Q					
Operational Evaluation (OT-C-1)	1Q						
Developmental Testing (DT-C-2)	1Q-4Q	1Q					
Developmental Testing (DT-C-3)		1Q-4Q	1Q				
Component Shock Qualification Testing	1Q-4Q	1Q-3Q					
Technical Evaluation (DT-C-4) (TECHEVAL)		4Q	1Q-2Q				
Total Ship Survivability Test			2Q				
Operational Evaluation (OT-C-2) (OPEVAL)			2Q-3Q				
IOC			3Q				
727 ERO	1Q-4Q	1Q-4Q	1Q				
727 Conversion	2Q-4Q	1Q-4Q	1Q				
728 ERO	1Q-4Q	1Q-2Q					
728 Conversion	1Q-4Q	1Q-2Q					
729 ERO	2Q-4Q	1Q-4Q	1Q-4Q				
729 Conversion		1Q-4Q	1Q-4Q				
FOC				3Q			

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 2 of 2)

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE						
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		Advanced Submarine System Development/0603561N						
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		89.790	159.531	140.432	158.361	164.053	164.759	144.597
Adv. Sub. Systems Development/2033		41.641	79.208	85.354	98.456	117.308	116.258	92.807
Adv. Sub. Combat Sys. Dev/0223		43.587	61.223	55.078	59.905	46.745	48.501	51.790
Fiber Optic Multi-Line Towed Array/9189		1.560	0.000	0.000	0.000	0.000	0.000	0.000
MK 48 ADCAP Torpedo Improve/9039		2.032	0.000	0.000	0.000	0.000	0.000	0.000
Speciality Optical Fiber w/ Embedded Sensors/9526		0.970	0.000	0.000	0.000	0.000	0.000	0.000
Issue 9999 - Congressional Adds		0.000	19.100	0.000	0.000	0.000	0.000	0.000

Defense Emergency Response Funds (DERF) Funds: N/A

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program element supports innovative research and development in submarine hull and combat systems technologies and the subsequent evaluation, demonstration, and validation for submarine platforms. It will increase the submarine technology base and provide subsystem design options not currently feasible. The program element also supports programs transitioning from Future Naval Capabilities (FNC's).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-ACAT program that transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, develops submarine design and naval architecture products destined for backfit, forward fit, and/or future submarines, and operates unique R&D experimentation, modeling, and simulation facilities to enhance submarine stealth, maneuverability, and affordability. The program is structured to support near term VIRGINIA Class technology insertion, future submarine concepts, and core technologies. Focus is on the four SEA POWER 21 warfighting pillars, SEA BASE, SEA SHIELD, FORCENET, and SEA STRIKE. Focus is also on SEA TRIAL. SEA TRIALS emphasize warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasures, Strike Warfare, and Counter Weapons of Mass Destruction. Payloads and Sensors demonstrations and SEA TRIALS conducted in a joint warfighting context with other services, i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force, enable early assessment of warfighting capabilities contributing to better technology selection decisions for potential spiral development. This program also supports Information Exchange Programs with the United Kingdom and Canada.

Congress included the following changes to the FY05 President's Budget in the FY05 Defense Appropriation Act: +\$5.000M for Payloads and Sensors, +\$1.400M for Advanced Composite Structure Programs, +\$2.100M for MK-48 ADCAP torpedo improvement program, +\$1.600M for Fiber Optic TB-16 Towed Array, +\$1.000M for Improved Tactical Control in submarine Systems, +\$2.000M for Special Optical Fiber with Embedded Sensors, and -\$5.000M for Development and Demonstration of UUV in Submarine Operations.

Congress included the following changes to the FY06 President's Budget in the FY06 Defense Appropriations Act: -\$20.000M for Undersea Superiority System, +\$2.600M for Experimental Research Transformation Submersible Studies, +\$3.000M for Inner and Outer Decoupler Materials for Hull Arrays, +\$1.000M for SSN Navigation Enhancement Module, and +\$2.500M for Submarine Tactical Monitor (SubTaM) and +\$10.000M for SSGN /UUV Integration Program.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE Advanced Submarine System Development/0603561N	
<p>Project Unit 0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities and the Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A) and Advanced Processing Build-Tactical (APB-T) tactical control and Advanced Hull Arrays. APB's develop and demonstrate improvements to current and future sonar/combatt control systems. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific platform applications.</p> <p>Project Unit 9039 is congressional add to develop MK48 ADCAP torpedo improvements.</p> <p>Project Unit 9189 is congressional add to develop Fiber Optic Mult-Line Towed Array.</p> <p>Project Unit 9526 is congressional add to develop Specialty Optical Fiber with Embedded Sensors improvements.</p> <p>Project Unit 9999 is comprised of FY06 congressional adds for Experimental Research Transformation Submersible Studies, Inner and Outer Decoupler Materials for Hull Arrays, Submarine Tactical Monitor (SubTaM), and SSN Navigation Enhancement Module.</p>		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development			PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
2033/Adv. Sub. Systems Development		41.641	79.208	85.354	98.456	117.308	116.258	92.807
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program supports innovative research and development in submarine hull and combat systems technologies and the subsequent evaluation, demonstration, and validation for submarine platforms. It will increase the submarine technology base and provide subsystem design options not currently feasible. The program element also supports programs transitioning from Future Naval Capabilities (FNC's).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-ACAT program that transitions Hull, Mechanical, and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, develops submarine design and naval architecture products destined for backfit, forward fit, and/or future submarines, and operates unique R&D experimentation, modeling, and simulation facilities to enhance submarine stealth, maneuverability, and affordability. The program is structured to support near term VIRGINIA Class technology insertion, future submarine concepts, and core technologies. Focus is on the four SEA POWER 21 warfighting pillars, SEA BASE, SEA SHIELD, FORCENET, and SEA STRIKE. Focus is also on SEA TRIAL. SEA TRIALS emphasize warfighting capabilities in the areas of Anti-Submarine Warfare, Mine Countermeasures, Strike Warfare, and Counter Weapons of Mass Destruction. Payloads and Sensors demonstrations and SEA TRIALS conducted in a joint warfighting context with other services, i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force, enable early assessment of warfighting capabilities contributing to better technology selection decisions for potential spiral development. This program also supports Information Exchange Programs with the United Kingdom and Canada.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

	FY 05	FY06	FY07
Payloads and Sensors/Subtotal Cost	17.800	23.421	17.416
RDT&E Articles Quantity			

Develop promising technologies and/or concepts capable of revolutionizing submarine design, improving payload flexibility, reducing weight and space requirements, exploring alternative payload launch mechanisms, increasing reliability with concomitant decreases in required maintenance, and improving material strength. Develop payload demonstrations targeted at improving flexible ocean interface, Intelligence/Surveillance/Reconnaissance (ISR) requirements, and universal encapsulation methods from undersea platforms. Conduct joint SEA TRIALS that take the demonstrations to the Fleet in order to assess the operational value of the technologies and systems under consideration. The SEA TRIALS/experiments support examination and assessment of potential new Fleet capabilities based on the Sea Power 21 Pillars of SEA SHIELD, SEA BASING, SEA STRIKE, and FORCENET.

FY05 Accomplishments include the following: Prepared for land-based vertical launch of an encapsulated small missile. Completed SILENT HAMMER SEA TRIAL Experiment to explore how a network of forces consisting of Special Operations Forces sea based on an SSGN can fill joint gaps (ISR and Time Sensitive Strike). Joint Force Commander and staff embarked on the SSGN successfully ran complex operation with connectivity provided by a Battle Management Center. Completed Military Utility Assessment of technologies used in the SEA TRIAL. Completed contingency Energy Storage System (ESS) preliminary and final design for the Rotary Electromagnetic Launcher (REML). Completed Engineering Development Model (EDM) REML Launch Motor design and released the Launch Motor engineering drawing for bids. Completed the REML sub-scale motor power converter integration test. Constructed full-scale representative Composite Advanced Sail section and test apparatus to be used in FY06 static and fatigue strength tests, validated fatigue and flaw analytic methodology on scale components, fully characterized alternate (Vetron) material, and completed Advanced Sail shape ice breakthrough load test and analysis. Completed a report to Congress on "Submarine Technology Insertion."

FY06 Planned Accomplishments include the following: Conducted land-based vertical launch of a small missile in Nov 05. Use results of the land-based vertical launch of a small missile to develop universal launch technologies for encapsulated sea-based launch of Unmanned Aerial Vehicles or any small missile. Complete the REML ESS advanced concepts safety and performance test. REML launch motor delivered and start full-scale integration testing. Perform full-scale static and fatigue test of representative full-scale Composite Advanced Sail section and validate against analytical techniques, perform shock test of foam filler material. Perform impact test to determine residual strength of composite structural components. Update report to Congress on "Submarine Technology Insertion."

FY07 Planned Accomplishments include the following: Prepare for underwater launch of an encapsulated small missile or UAV from an universal capsule. Complete REML full-scale integration test and conduct full-scale concept demonstration test. Develop final design guidance for designing non-pressure hull structural components from composite materials. Update report to Congress on "Submarine Technology Insertion."

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development
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B. Accomplishments/Planned Program

	FY 05	FY06	FY07
Stealth /Subtotal Cost	13.361	16.504	11.308
RDT&E Articles Quantity			

Develop technologies and tools to increase the safety of submarines by recognizing and mitigating sources of noise, improving the probability of safe transit in the vicinity of mine fields, ensuring that submarines can penetrate contested waters by reduced acoustic observables, and remaining undetected in the littorals. Operate the Large Scale Vehicles (LSV 2) and the Intermediate Scale Measurement System (ISMS) to conduct large model experiments for submarines focusing on stealth, maneuvering and control, affordability, and operational effectiveness.

FY05 Accomplishments include the following:

Conducted six Large Scale Vehicle (LSV2) underway operations for characterization. Conducted forward-scatter measurements with Directional Frequency Analysis & Recording (DIFAR) sensors for ONR and PSU-ARL projects, utilizing the Intermediate Scale Measurement System (ISMS) Range and PIKE submarine model. Utilized the ISMS transmit array to provide acoustic tones for underway operational and calibration tests during 2 TB-16 towed array tests. Completed level one and initiated level two qualification testing of Conformal Acoustic Velocity Sonar (CAVES) outer decoupler material.

FY06 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Complete level two qualification testing of CAVES outer decoupler material. Initiate development of CAVES inner decoupler material. Design a scale model of a naval vessel for use in alternating current electromagnetic signature (AC EM) mitigation development. Conduct acoustic imaging analysis of SSN-23 external flow noise. Develop interface requirements for tactical decision aid for mine susceptibility.

FY07 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Fabricate the scale model naval vessel for AC EM signature testing. Initiate testing of an electromagnetic tactical decision aid design interface. Complete CAVES outer decoupler level three and inner decoupler level one qualification. Conduct acoustic imaging analysis of SSBN flow noise.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY06	FY07
Total Ownership/Affordability /Subtotal Cost	0.353	1.708	1.323
RDT&E Articles Quantity			

Demonstrate technologies that have the potential to reduce total life cycle costs of the system by providing reduced construction costs, longer life of parts, and/or lower maintenance requirements.

FY05 Accomplishments: Completed Business Case Analysis for implementing Electric Actuation Systems (EAS) on submarines. Procured EAS Engineering Development Model (EDM) for test purposes.

FY06 Planned Accomplishments: Complete qualification & integration testing of the EAS EDM. Procure a second design EAS EDM and complete qualification & integration testing. Design and fabricate external damping treatments for the free-flood area. Perform free-flood acoustic test on damping material.

FY07 Planned Accomplishments: Conduct free-flood area damping material pop up test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development
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B. Accomplishments/Planned Program (Cont.)

		FY 05	FY06	FY07
Advanced Propulsion/Ship Concept Development/Subtotal Costs		10.127	37.575	55.307
RDT&E Articles Quantity				

Overcome selected technological barriers that are expected to have significant impact on submarine hull, maintenance and electrical (HM&E) systems to enable design options for a submarine with VIRGINIA Class capability in five technical areas: Shaftless Propulsion, External Weapon Stow and Launch, Hull Adaptable Sonar Array, Radical Ship (HM&E) Infrastructure Reduction and Reduced Crew/Automated Attack Center. Develop and demonstrate promising and innovative maneuvering-related concepts and methods to improve maneuvering performance in the littoral and ability to deliver payloads. Develop submarine alternative propulsion and stern configurations with potential to significantly reduce submarine acquisition cost. Demonstrate maneuvering, stealth, and other critical performance parameters via Appropriate Scale Demonstrators in realistic environmental conditions. Evaluate integration of technologies and approaches for cost reduction in future nuclear submarines. Develop understanding of ship concept studies and submarine cost drivers and model analysis. Advances making submarines more affordable can be leveraged from FY05/06 tasks, which evaluate cost reduction ideas with ship impact assessments. This work will apply to future submarine designs and will begin the long-lead concept work on the next undersea strategic deterrent platform, for which design work must begin in earnest early next decade. Conduct concept studies and mission utility studies for variant submarine designs, including VIRGINIA derivatives. Develop a future undersea superiority system alternative to the reduced submarine program.

FY05 Accomplishments include the following: Completed source selection and awarded contracts for Phase 1 of TANGO BRAVO efforts in the thrusts of Shaftless Propulsion, External Weapons Store and Launch, and Radical Ship Infrastructure Reduction. Efforts in these areas commenced in FY05 and Phase 1 will conclude in FY06.

FY06/07 Planned Accomplishments include the following: Conceptual design, analysis and component-level or small-scale demonstrations of TANGO BRAVO technologies. Conduct independent studies to inform NAVY on the costs, benefits, and risks associated with sustaining nuclear submarine design capabilities. Identify submarine construction drivers and improved submarine cost models. Develop improved definition of technologies and approaches for cost reduction in current and future nuclear submarines.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY2007
FY06 President's Controls	39.058	100.728	147.742
FY07 OSD Controls	41.641	79.208	85.354
Total Adjustments	2.583	-21.520	-62.388

Summary of Adjustments

Distribute Undersea superiority system add			-56.000
Small Business Innovative Research	-0.387		
Department of Energy Transfer	-0.030		
BTR for Undersea Dominance	3.000		
Distribute Undersea superiority system add			
Contract Support Reduction			-6.425
NWCF Civpers Efficiencies			-0.383
N7 Respread of Contractor			-0.110
Inflation			0.407
Civpers Pay Raise Rate			0.123
Sec. 8026(f): Federally Funding		-0.008	
Sec. 8125: Revised Economic		-0.459	
Congressional Reduction to undersea superiority system		-20.000	
Congressional Action 1% Reduction		-1.053	
Subtotal	2.583	-21.520	-62.388

Schedule: not applicable.

Technical: not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Developmen	PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
Not applicable.									

E. ACQUISITION STRATEGY:

Award follow-on sole source conform studies contracts to Electric Boat (EB) and Northrup Grumman Newport News (NGNN).

F. MAJOR PERFORMERS:

Newport News Shipbuild, Newport News, Va R&D Support	12/04	10/05	11/06						
Electric Boat Corp., Groton, CT. R&D support	12/04	10/05	11/06						
Naval Surf Warfare Ctr, Carderock, MD. R&D support	10/04	10/05	10/06						
Naval Undersea Warfare Ctr, Newport, R.I. R&D support	10/04	10/05	10/06						
Raytheon, Portsmouth, RI		12/05	12/06						

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER							
RDT&E, N/BA-4			PE0603561N Advanced Submarine System Development				2033/Advanced Submarine Systems Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY05 Cost	FY 05 Award Date	FY06 Cost	FY 06 Award Date	FY07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Targ Value of Contract
Product Development	S/CPFF	EB Groton, CT	0.000			2.940	Various					0.000	2.940	
Product Development	S/CPFF	NNS Newport News, VA	24.821			0.401	Various	0.070	10/05			0.000	25.292	44.671
Product Development	S/CPFF	NNS Newport News, VA	0.000					0.235	04/06	1.905	12/06	TBD	TBD	TBD
Product Development	S/CPFF	EB Groton, CT	80.515			0.872	Various	0.348	10/05			0.000	81.735	83.560
Product Development	S/CPFF	EB Groton, CT	0.000					21.969	04/06	34.441	12/06	TBD	TBD	TBD
Product Development	S/CPFF	Raytheon	0.000					4.559	02/06	4.285	12/06	TBD	TBD	
Product Development	WR	NSWC Bethesda, MD	252.079			14.697	Various	18.389	Various	11.911	10/06	CONT.	CONT.	
Product Development	S/CPFF	ARL/PSU, State College, PA	36.415			0.418	Various	0.406	02/06	0.435	12/06	CONT.	CONT.	
Product Development	S/CPFF	Noesis	5.448			0.234	Various					0.000	5.682	5.682
Product Development	Various	Various	178.249			3.624	Various	11.023	Various	6.015	Various	CONT.	CONT.	
Product Development	WX	NUWC Newport	1.115			1.956	Various	1.148	Various	0.915	10/06	CONT.	CONT.	
Product Development	RX	NUWC Newport	0.000			9.350	Various	10.750	Various	14.750	12/06	CONT.	CONT.	
Subtotal Product Development			578.642			34.492		68.897		74.657				
Remarks:														
Development Support Equipment														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Subtotal Support						0.000		0.000		0.000		0.000	0.000	0.000
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NAME AND NUMBER							
RDT&E, N/BA-4				PE0603561N Advanced Submarine System Development			2033/Advanced Submarine Systems Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY05 Cost	FY05 Award Date	FY06 Cost	FY06 Award Date	FY07 Cost	FY07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & E	S/CPFF	Raytheon	12.560			1.224	Various					0.000	13.784	
Developmental Test & E	S/CPFF	Raytheon	0.000			0.931	06/05	4.000	02/06	5.000	12/06	TBD	TBD	
Developmental Test & E	S/CPFF	Lockheed Martin	5.500			1.094	Various					0.000	6.594	
Developmental Test & E	Various	Various	3.477			0.140	Various	2.909	Various	2.047	Various	CONT.	CONT.	
Developmental Test & E	S/CPFF	MIT Lincoln Lab	0.600			0.171	Various					0.000	0.771	
Developmental Test & E	WX	NUWC Newport	0.650					0.237	Various	0.433	10/06	CONT.	CONT.	
Developmental Test & E	S/CPFF	JHU/APL	0.459			0.065	02/05					0.000	0.524	
Subtotal T&E			23.246			3.625		7.146		7.480				
Remarks:														
Contractor Engineering Su	CPFF	Various	4.593			1.899	11/04	1.849	11/05	1.891	11/06		CONT.	
Government Engineering S	WR	Various	2.698			1.575	10/04	1.256	10/05	1.266	10/06		CONT.	
Travel			0.282			0.050	10/04	0.060	10/05	0.060	10/06		CONT.	
Subtotal Management			7.573			3.524		3.165		3.217				
Remarks:														
Total Cost			609.461	0.000		41.641		79.208		85.354				

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

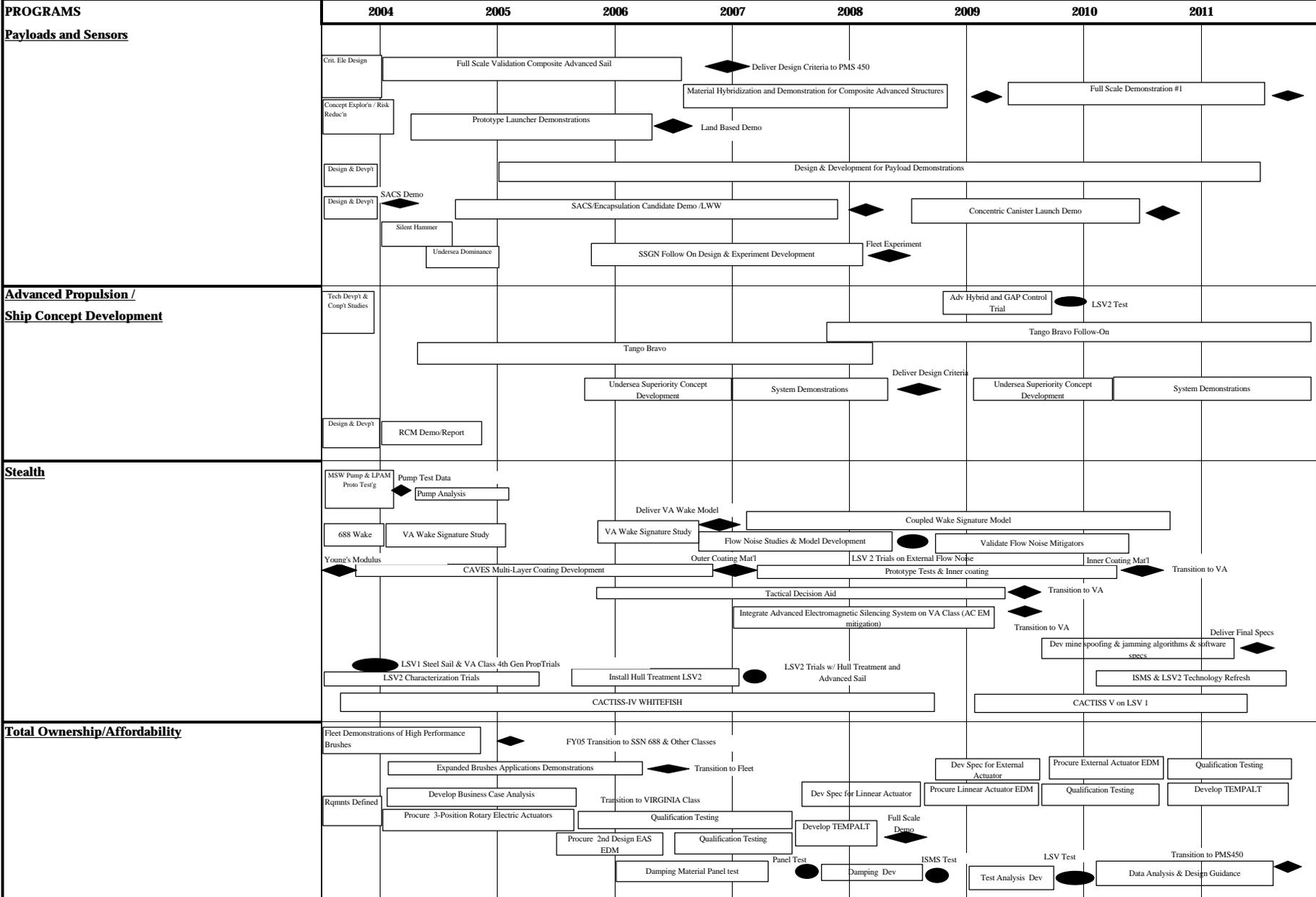
DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY
RDT&E, N / BA-4

PROGRAM ELEMENT NUMBER AND NAME
PE0603561N Advanced Submarine System Development

PROJECT NUMBER AND NAME
2033/Advanced Submarine Systems Development



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT			PROJECT NUMBER AND NAME				
RDT&BA-4	PE0603561N Advanced Submarine System Development			2033/Advanced Submarine Systems Development				
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Payloads & Sensors								
Fabricate and demo full scale composite Adv. Sail prototype		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q					
Complete Comp. Adv. Sail development, transition to VA class				1Q				
Comp. Adv. Structures complete design criteria/req. doc./testing				1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q		
Full Scale Demo of Composite Structures						3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q
Rotary Electromagnetic Launcher Land Based Demo			4Q	1Q				
SILENT HAMMER SEA TRIAL		1Q						
UNDERSEA DOMINANCE 04 SEA TRIAL		1Q						
SACS Demonstrations		1Q						
Advanced Payload Demonstrations Design & Development		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q
Encapsulation Demonstrations				4Q		4Q		
SSGN Follow On Fleet Experiment					1Q,2Q,3Q,4Q			
Advanced Propulsion/Ship Concept Development								
Improved Advanced Hybrid & Gap Control LSV II Trial							1Q, 2Q	
Joint Navy/DARPA Tango Bravo		1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q			
Tango Bravo Follow-On					1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q
Undersea Superiority			1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q	1Q, 2Q, 3Q, 4Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT			PROJECT NUMBER AND NAME				
RDT&BA-4	PE0603561N Advanced Submarine System Development			2033/Advanced Submarine Systems Development				
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Stealth								
VA Wake Signature Study		2Q, 3Q, 4Q						
Deliver VA Wake Signature Model		4Q						
Coupled Wake Signature Model Development			1Q, 2Q, 3Q, 4Q	Q, 2Q, 3Q, 4Q	Q, 2Q, 3Q, 4Q	Q, 2Q, 3Q, 4Q		
LSV2 Trials on External Flow Noise				3Q, 4Q				
CAVES Multi-Layer Coating Development	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q					
New Coating Material			2Q			3Q		
Prototype Tests for Outer Material and Dev Inner Material			3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q		
Tactical Decision Aid Interface Development & Testing		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			
EM Silencing Evaluate & Integrate Advanced Sys on VA Class			3Q,4Q	1Q,2Q,3Q,4Q	3Q			
LSV2 acoustic characterization trial	1Q,2Q,3Q,4Q	1Q						
LSV2 RAV install hull treatment on pressure hull and sail		2Q, 3Q, 4Q	1Q,2Q					
Complete VA advanced sail trials, LSV2			3Q,4Q					
VIRGINIA Aft Flow Noise trial, LSV2				3Q,4Q				
LSV2 Technology refresh						3Q,4Q	1Q, 2Q, 3Q	
Technology refresh of Intermediate Scale Meas. System						3Q,4Q	1Q, 2Q, 3Q	
Total Ownership/Affordability								
Comp. Adv. Metal Brushes transition to PMS 392			3Q					
Business Case Analysis for Electric Actuation System (EAS)	1Q,2Q,3Q,4Q	1Q						
Conduct qualification testing & evaluation of prototype EAS		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q			1Q,2Q,3Q,4Q	1Q,2Q,3Q	
Conduct full scale demonstration				4Q			4Q	
Develop Free-Flood Area Damping Material		1Q,2Q,3Q,4Q	1Q,2Q,3Q,4Q	2Q, 3Q				
Damping Material Panel Test				1Q				
Test on Intermediate Scale Measurement System				4Q				
Large Scale Test of Damping Material						3Q		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/Advanced Submarine System Development			PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0223/Adv. Submarine Combat Sys. Improv.		43.587	61.223	55.078	59.905	46.745	48.501	51.790
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program supports innovative research and development in submarine technologies and the subsequent evaluation, demonstration, and validation for submarine platforms. It will increase the submarine technology base and provide subsystem design options not currently available.

Project Unit 0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities and the Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A), Advanced Processing Build-Tactical (APB-T), tactical control and Advanced Sonar Arrays. APB's develop and demonstrate improvements to current and future sonar/combata control systems. Advanced Sonar Arrays develops new sensors and demonstration large array configuration. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific platform applications.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006													
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/Advanced Submarine System Development	PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)														
B. Accomplishments/Planned Program																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 15%; text-align: center;">FY 2005</th> <th style="width: 15%; text-align: center;">FY 2006</th> <th style="width: 15%; text-align: center;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Advanced Sonar System Processing/Subtotal Cost</td> <td style="text-align: center;">27.087</td> <td style="text-align: center;">35.223</td> <td style="text-align: center;">29.178</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 2005	FY 2006	FY 2007	Advanced Sonar System Processing/Subtotal Cost	27.087	35.223	29.178	RDT&E Articles Quantity			
	FY 2005	FY 2006	FY 2007													
Advanced Sonar System Processing/Subtotal Cost	27.087	35.223	29.178													
RDT&E Articles Quantity																
<p>Advanced Processing Build-Acoustic (APB-A) transitioned to PMS401 for fleet introduction in FY 04. FY 05 APB(A) has continued improvements in sonar detection and classification via improved algorithms and automation for towed arrays. Recent efforts were focused on Acoustic Contact Correlation and improved integration with Tactical Control to enhance close aboard situational awareness and a contact avoidance functionality. These enhancements will continue to be refined over the near term in concert with a special focus on expanding INtelligent Preparation of the Battlespace including HF Active close aboard capabilities, Precision Underwater Mapping functionality, improved sonar planning and environmental monitoring, as well as processing enhancements for Sphere Arrays. Efforts for FY06 and FY07 will focus on improving the acoustic contribution to ASW in the littorals. Primary improvements are planned for thin-line towed array signal processing, precision tracking and refined automation. Signal processing for the TB-29 Towed Array will be redesigned to improve noise discrimination in shallow water environments and to enhance array shape estimation techniques to improve contact holding through maneuvers. A new integrated precision tracker is being developed as well as additional automation focused on SSK detection and shallow water noise suppression.</p>																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 15%; text-align: center;">FY 2005</th> <th style="width: 15%; text-align: center;">FY 2006</th> <th style="width: 15%; text-align: center;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Advanced Tactical Control/Subtotal Cost</td> <td style="text-align: center;">8.000</td> <td style="text-align: center;">12.000</td> <td style="text-align: center;">12.000</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 2005	FY 2006	FY 2007	Advanced Tactical Control/Subtotal Cost	8.000	12.000	12.000	RDT&E Articles Quantity			
	FY 2005	FY 2006	FY 2007													
Advanced Tactical Control/Subtotal Cost	8.000	12.000	12.000													
RDT&E Articles Quantity																
<p>Advanced Processing Build-Tactical (APB-T) transitioned to PMS425 for fleet introduction in FY 04. FY 05 APB(T) focused on improving tactical employment and operational guidance for the advanced algorithms in the Tactical Control System. Future efforts will focus on enhancing functionality through refined all source data fusion algorithms and in improving the tactical commander's ability to manage close in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, sensor performance prediction models, search planning, uncertainty management, acoustic and non-acoustic vulnerability management, close encounter decision management, and automation. In FY 05 began advanced processing techniques in data fusion and state estimation leveraged from ONR/DARPA. FY06 will focus on improving state estimation and tactical display sharing across subsystems. FY07 will focus on integrating non-acoustic sensor data such as imaging and radar into tactical contact management algorithms. Automation will be introduced to reduce operator work load through increased surface and subsurface target recognition in tactical scene rendering plots. Automated route planning aides to improve covertness and contact management will be addressed. Command level information management and new display sharing across subsystems will also be pursued</p>																

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603561N/Advanced Submarine System Development	PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)
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B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Advanced Sensors/Subtotal Cost		8.500	14.000	13.900
RDT&E Articles Quantity				

The Advanced Sensor Systems project is developing improved, larger aperture sonars and digital acoustic communications systems in order to achieve acoustic superiority over potential threat submarines. Current projects include: Low Cost Conformal Array (LCCA), a modular HF contact management sonar that could be mounted on submarine sails; Large Vertical Array (LVA), a CAVES-based MF ASW sonar that may be either stand alone, or may be combined with two other LVAs to form a Large Wide Aperture Array for VIRGINIA forward-fit; the Fiber-Optic TB-16 towed array; Twin Line Towed Array; and ACOMMs, a digital acoustic communications system for submarines and surface ships. In FY05, prepare for installation of LCCA Advanced Development Model (ADM) on an SSN 688I class submarine as a single side array; complete testing of the Fiber Optic TB-16 towed array; resume the CAVES LVA project (including refining ADM design, conducting engineering testing); and initiate MF ACOMMS transition to the fleet. In FY 06 install and test the LCCA ADM; begin development of the LCCA Engineering Development Model (EDM) and Twin Line concept studies and demonstrations; build and test an LVA mockup; and develop improved MF ACOMMS performance. In FY07, continue development of a twin line system; coordinate with PMS 401 on development of the LCCA EDM; begin fabrication of the LVA ADM; develop low heat, small footprint, high processing power electronics for LCCA and Rapid COTS Insertion; and complete MF ACOMMS surface ship development and test.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine Systems Development	PROJECT NUMBER AND NAME 0223/Advanced Submarine Systems Development/0603561N	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget Controls	44.474	62.225	60.990
FY2007 Pesident's Budget Controls	43.587	61.223	55.078
Total Adjustments	-0.887	-1.002	-5.912
Summary of Adjustments			
PPBS Baseline-PB-06			-5.702
Contract Support Reduction			-0.738
NWCF Civpers Efficiencies			2.878
N7 Respread of Contract Support			-2.700
Small Business Innovation Rese	-0.805		
Inflation			0.271
Civpers Pay Raise Rate			0.079
Sec. 8026(f): Federally Funded		-0.068	
Sec. 8125: Revised Economic As		-0.283	
Congressional Action 1% Reduction		-0.651	
Department of Energy Transfer	-0.034		
Cancelled Accounts Liabilities	-0.048		
Subtotal	-0.887	-1.002	-5.912
Schedule: N/A			
Technical: N/A			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE:		February 2006	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME			
RDT&E, N / BA-4			0603561N/Advanced Submarine System Development			0223/Submarine Combat System Improv (Adv)			
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	<u>To Complete</u>	<u>Total Cost</u>
Not applicable.									
 E. ACQUISITION STRATEGY: * Plan to use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.									
 F. MAJOR PERFORMERS: **									
<p>Naval Undersea Warfare Center, Newport, R.I. R&D support. Naval Research Laboratory, Washington, DC. Naval Surface Warfare Center, Carderock, MD. R&D Support. John Hopkins University/Applied Physics Lab, Laurel, MD R&D support. Applied Research Lab., The University of Texas, Austin, TX. R&D Support. MITRE Corporation, McLean, VA R&D Support. Lincoln Lab, Cambridge, MA R&D Support. General Dynamic/Advanced Information Systems, Fairfax, VA. R&D Support. Lockheed Martin, Manassas, VA R&D Support. Raytheon, Portsmouth, RI R&D Support. (All performers support APB (A) and APB(T).</p>									

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603561N/Advanced Submarine System Development			0223/Submarine Combat System Improv (Adv)								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	77.036			12.775	10/04	15.526	10/05	14.473	10/06	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	1.000										1.000	
Product Development	WR	NRL/Washington	5.039			0.000	10/04	0.656	10/05	0.656	10/06	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.490										0.490	
Product Development	WR	NSWC Carderock, MD	10.511			1.665	10/05	2.705	10/05	2.000	10/06		CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036							2.000	10/06		CONT.	
Product Development	WR	NSWC Dahlgren	0.258			0.080	10/04	0.080	10/05	0.080	10/06	CONT.	CONT.	
Product Development	PD	ONI, Washington	3.685			1.007	12/04	1.007	12/05	0.900	12/06	CONT.	CONT.	
Product Development	C/CPFF	Lockheed Martin, VA	19.576			1.304	12/04	3.466	12/05	3.818	12/06	CONT.	CONT.	
Product Development	C/CPFF	BAE, NH	3.402										3.402	
Product Development	RCP	NSMA	0.855			0.180	11/04	0.180	11/05	0.180	11/06	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	7.740			1.185	12/04	1.800	12/05	1.800	12/06	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Labs	6.820			1.244	12/04	1.744	12/05	1.744	12/06	CONT.	CONT.	
Product Development	RCP	ONR/MCCI	2.800										2.800	
Product Development	MIPR	METRON	2.165			1.508	12/04	1.508	12/05	1.508	12/06	CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	2.290			0.237	12/04	0.237	12/05	0.237	12/06	CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	2.836										2.836	
Product Development	RCP	ONR/GTRI	2.050			0.000		0.250	12/05	0.500	12/06	CONT.	CONT.	
Product Development	SS/CPFF	APL/JHU, MD	35.451			7.839	12/04	10.339	12/05	9.839	12/06	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.225			0.050	12/04	0.050	12/05	0.050	12/06	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	25.987			3.601	12/04	4.601	12/05	4.001	12/06	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	1.875			0.207	12/04	0.350	12/05	0.350	12/06	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	1.050			0.000	01/05	0.150	01/06	0.150	01/06	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.170			0.030	10/04	0.030	10/05	0.030	10/06	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.713				10/04	0.140	10/05	0.140	10/06	CONT.	CONT.	
Product Development	PD	SPWAR, CA	1.036			0.400	10/04	0.400	10/05	0.400	10/06	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	18.204			2.149	10/04	8.504	10/05	4.448	10/06	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.395			0.178	10/04	0.100	10/05	0.100	10/06	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603										5.603	
Product Development	CPFF	Lockheed Martin	2.250			1.889	12/04	1.590	12/05	2.420	10/06	CONT.	CONT.	
Product Development	MIPR	DARPA, VA	21.600										21.600	
Product Development	Various	Various	2.645										2.645	
Product Development	C/CPFF	Northrop Grumman	1.100					0.400	12/05	0.600	12/06		CONT.	
SBIRs / BAAs	C/CPFF	Various	6.500			4.184	Various	3.385	Various	0.079	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315										1.315	
Subtotal Product Development			274.708			41.712		59.198		52.503		CONT.	CONT.	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 3)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603561N/Advanced Submarine System Development				PROJECT NUMBER AND NAME 0223/Submarine Combat System Improv (Adv)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	2.693							0.500			CONT.	
Developmental Test & Evaluation	C/CPFF	RAYTHEON	4.211										4.211	
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			6.904			0.000		0.000		0.500			4.211	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	C/CPFF	Integrated Product Dec, CT	0.450										0.450	
Program Management Support	C/CPFF	Stanley Associates, VA	5.388			1.000	12/04	1.000	12/05	1.000	12/06	CONT.	CONT.	
Program Management Support	C/CPFF	Various	1.440			0.800	12/04	0.950	12/05	1.000	12/06	CONT.	CONT.	
Program Management Support	C/CPFF	EG&G	1.787										1.787	
Program Management Support	C/CPFF	Anteon Corporation	0.198										0.198	
Travel			0.350			0.075		0.075		0.075		CONT.	CONT.	
Transportation														
SBIR Assessment														
Subtotal Management			9.613			1.875		2.025		2.075		CONT.	CONT.	
Remarks:														
Total Cost			299.225			43.587		61.223		55.078		CONT.	CONT.	
Remarks:														

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R4, Schedule Profile																			DATE: February 2006									
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME												
RDT&E, N / BA-4				PE 0603561N Advanced Submarine Systems Development												0223 Advanced Submarine Combat Systems Development												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Advanced Processing Build (Acoustic)	APB(A)-				APB(A)-05				APB(A)-06				APB(A)-07				APB(A)-08				APB(A)-09							
	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Advanced Processing Build (Tactical)	APB(T)-04				APB(T)-05				APB(T)-06				APB(T)-07				APB(T)-08				APB(T)-09							
	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
TB-16 Multi-Line Towed Array (MLTA)	Module & Recvr																											
	<input type="checkbox"/>			<input type="checkbox"/>																								
Conformal Acoustic Velocity Sonar / Large Vertical Array																												
Low Cost Conformal Array (LCCA)																												

R-1 SHOPPING LIST - Item No. 46

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

S Transition

Note: For APB 04 only, decision to transition based on laboratory vs Sea Test.

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT			PROJECT NUMBER AND NAME				
RDT&E BA-4	PE 0603561N Advanced Submarine Systems Development			0223 Advanced Submarine Combat Systems Development				
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Processing Builds (Acoustic)								
Transition APB-03 to ARCI								
APB(A)-04 Laboratory Test								
Transition APB-04 to ARCI		2Q						
APB(A)-05 Sea Test		4Q						
Transition APB-05 to ARCI			2Q					
APB(A)-06 Sea Test			4Q					
Transition APB-06 to ARCI				2Q				
APB(A)-07 Sea Test				4Q				
Transition APB-07 to ARCI					2Q			
APB(A)-08 Sea Test					4Q			
Transition APB-08 to ARCI						2Q		
APB(A)-09 Sea Test						4Q		
Transition APB-09 to ARCI								
Advanced Processing Builds (Tactical)								
Transition APB(T)-03 to CCS								
APB(T)-04 LabTest								
Transition to CCS		2Q						
APB(T)-05 Sea Test		4Q						
Transition to CCS			2Q					
APB(T)-06 Sea Test			4Q					
Transition to CCS				2Q				
APB(T)-07 Sea Test				4Q				
Transition to CCS					2Q			
APB(T)-08 Sea Test					4Q			
Transition to CCS						2Q		
APB(T)-09 Sea Test						4Q		
Transition to CCS								

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT			PROJECT NUMBER AND NAME				
RDT&E BA-4	PE 0603561N Advanced Submarine Systems Development			0223 Advanced Submarine Combat Systems Development				
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
TB-16 Multi-Line Towed Array (MLTA)								
24-channel acoustic module LPO self noise & shakedown test								
96-channel acoustic module and receiver intergration								
96-channel system test								
96-channel system LPO tow test		1Q						
Conformal Acoustic Velocity Sonar/Large Vertical Array								
Begin detail design, advanced procurement		1Q-4Q						
Construct and install array			1Q-4Q	1Q-4Q	1Q-4Q			
Test ADM					1Q-4Q	1Q-4Q		
Transition to VA Class						1Q-4Q	1Q-4Q	
Low Cost Conformal Array (LCCA)								
Build and test single ADM array		1Q-4Q						
Install 2nd Passive Array and add active staves to ADM and		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Transition to SSNs				1Q-4Q	1Q-4Q	1Q-4Q		
Production (Note: continues to FY16)							1Q-4Q	1Q-4Q

R-1 SHOPPING LIST - Item No. 46

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Development	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS
---	---	--

CONGRESSIONAL PLUS-UPS:

	FY 06			
9812N				
Experimental Research Transformational Submersible	2.600			

The Congressional add will provide for the initial studies, engineering, design, prototyping, test and evaluation, and certification of a transformational submersible using cutting edge commercial technologies with a focus on affordable portability, modularity, reduction of vehicle size, manning and annual operational support cost. The Experimental Research Transformation Submersible (XRTS) will support mission criteria and be affordable using commercial (COTS) based materials and equipment.

	FY 06			
9813N				
Inner & Outer Decoupler Materials for Hull Array	3.000			

Develop inner and outer decoupler materials to support the development and future application of large conformal arrays on submarines while maintaining or improving ship's stealth performance. The Congressional add will be used for the development, test, evaluation, and qualification of outer decoupler materials to support large conformal arrays such as the Conformal Velocity Sonar (CAVES) Large Vertical Array (LVA) and large Wide Aperture Array (lgWAA) concepts. Analysis will be performed to determine cost effective approaches for developing novel conformal array inner decouplers. Preliminary designs will be developed and supported by laboratory performance testing at small scale.

	FY 06			
9814N				
SSN Navigation Enhancement Module	1.000			

Navy intends to utilize the funds provided by Congress to enhance the accuracy of the AN/WSN-7A Inertial Navigation System by improving computer codes using new algorithms to take advantage of available geophysical data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine System Developmen	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS
---	--	--

CONGRESSIONAL PLUS-UPS:

	FY 06			
9815N				
Submarine Tactical Monitor (SubTaM)	2.500			

The Congressional add will be used to examine technology to continuously monitor own ship vulnerability to detection by enemy sensors and weapons and provide real time input to existing tactical analysis and display systems.

	FY 06			

	FY 06			

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603562N/Submarine Tactical Warfare Systems			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		5.891	7.017	10.357	9.909	10.219	10.400	10.650
0770/Advanced Sub. Spt Equipment Program		3.273	3.861	4.774	4.221	4.324	4.434	4.542
9040/Multi-Line Towed Array								
1739/Sub. Artic Warfare Development		2.618	3.156	5.583	5.688	5.895	5.966	6.108
Quality of RDT&E Articles								
Defense Emergency Response Funds (DERF) Funds: NOT APPLICABLE								
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Tactical Warfare Systems program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP) and the Submarine Special Operations Support Program. The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D). Areas of improved operational effectiveness for Electronic Warfare Support (ES) and Imaging technologies include Threat Warning/Self Protection; Situational Awareness; and Intelligence, Surveillance, and Reconnaissance. A continuing need exists to improve these capabilities in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. The Submarine Arctic Warfare Development program responds to the increased threat of Naval activity in the Littorals and the continuing threat of submarine and surface ship activity in regions of the world through the development of advanced submarine R&D technology to provide improved operational capability in shallow water regions. Particular emphasis is placed in the areas of sonar operability and maintainability, Littoral operations, mine warfare, tactical surveillance, weapon utility and other submarine support missions. Efforts include assessment of combat system effectiveness, development of Arctic shallow water specific improvements for existing sonars and weapons, development of class specific Arctic operational guidelines and the testing of ice-capable submarine support structures. This program also provides the framework for various R&D programs to conduct Test and Evaluation in shallow water and Arctic regions.</p>								

R-1 SHOPPING LIST - Item No. 47

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare System			PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		3.273	3.861	4.774	4.221	4.324	4.434	4.542
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A continuing need exists to improve submarine capabilities to improve safety of ship, survivability, and operational effectiveness in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ES and imaging to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection and Joint Strike. The program is divided into three project categories: Threat Warning/Self Protection, Situational Awareness, and Intelligence, Surveillance and Reconnaissance. The Threat Warning/Self Protection project evaluates the vulnerability of submarine masts, periscopes and sensors to visual, radar, and infrared detection and evaluates the state of the art technology to implement periscope/mast engineering improvements to reduce counter detection threats. Both Situational Awareness and Intelligence, Surveillance, and Reconnaissance projects develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies available from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility demonstration models (FDMs) are developed, evaluated, and validated in the lab and through at-sea testing.

Threat Warning/Self Protection sub-projects include: Mast Signature Reduction (RCS and EO/IR) and Low Probability of Intercept (LPI) Receiver.

Situational Awareness sub-projects include: Automated Rangefinder (Phase B), Imaging Technologies (virtual periscope), Automatic Identification System (AIS), Low Cost Expndable Sensor (LCES), Advanced Camera Technology (360 Degree Imaging System), Alternate Communications Acquisition Direction Finding (CADF) Antenna, and LCES Payload improvements.

Intelligence, Surveillance and Reconnaissance sub-projects include: Submarine Offboard Sensors (UAV/UUV Pay Load), Advanced EW Tuners, Passive Suriellance Radar (PSR) at-sea testing, PSR AIS and EVS Packaging Studies, Imaging Enhancements (fusion) and R.F. Imaging (360 Degree Non-Scanning Radar).

All programs funded in this project are non-acquisition category programs. Program plans and priorities are established by N77. The test articles identified consist of critical components that will be fully developed during engineering development into Engineering Development Models (EDM's).

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Exhibit R-2, RD TEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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B. Accomplishments/Planned Program

Threat Warning / Self Protection

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.066	0.023	0.125
RDT&E Articles Quantity				

Mast Signature Reduction - Selection of coating for RCS and EO/IR signature reduction, and development of a research EDM and testing.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				0.050
RDT&E Articles Quantity				

Low Probability of Intercept (LPI) - Development of receiver, testing, and integration of Ultra Wide Chirp capability.

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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B. Accomplishments/Planned Program (Cont.) Situational Awareness Enhancements

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.511	1.494	0.919
RDT&E Articles Quantity				

Patriot Rangefinder - Complete testing of Phase A, develop and test sub-components and conceptual EDM for Phase B (Stealthy / Data Link) including a new Phase B antenna prototype, and develop prototype unit for use with photonics mast.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.122		
RDT&E Articles Quantity				

Automatic Identification System (AIS) - Complete the development of a conceptual EDM and prepare for and conduct At-Sea testing program.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.444	1.400	2.350
RDT&E Articles Quantity				

Advanced Camera Technology (360 Degree Imaging System) - Define the specifications required for advanced development. Commence the development of an AEM, the tracking algorithms and gray scale correlator.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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B. Accomplishments/Planned Program (Cont.) Situational Awareness Enhancements (Cont.)

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.188		
RDT&E Articles Quantity				

Virtual Periscope - Continue development of system algorithms and prototype. Prepare for, conduct and analyze the results of At-Sea testing.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			0.594	0.450
RDT&E Articles Quantity				

Alternate CADF Antenna Technology - Develop a conceptual EDM and conduct field testing.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.246	0.250	0.350
RDT&E Articles Quantity				

Low Cost Expendable Sensor (was SAB, now LCES) - Develop conceptual design, develop a prototype, conduct At-Sea testing and commence the development of alternate or improved payloads.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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B. Accomplishments/Planned Program (Cont.) Intelligence, Surveillance, and Reconnaissance Enhancements

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.604	0.050	0.030
RDT&E Articles Quantity			

Passive Surveillance Radar (PSR) - Develop EDM and conduct At-Sea testing and analysis.
 Electronic Vulnerability Surveillance Server (EVS) - Develop EDM and conduct At-Sea testing and analysis.
 Feasibility Study - AIS/EVS/PSR Packaging.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.072	0.000	0.000
RDT&E Articles Quantity			

RF Imaging (360 Degree Non-Scanning Radar) - Conduct feasibility studies, develop concept design.
 Sensor Enhancements (Fusion) - Develop concepts, define requirements and performance specifications and a concept design.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.020	0.050	
RDT&E Articles Quantity			

Offboard Sensors (UUV/UAV Payloads) - Conduct feasibility studies, develop concepts and determine performance specifications.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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B. Accomplishments/Planned Program (Cont.) Intelligence, Surveillance, and Reconnaissance Enhancements (Cont.)

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				0.500
RDT&E Articles Quantity				

Advanced EW Tuners - Conduct feasibility studies and prepare performance specifications.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 06 Pres Budget Controls)	3.275	3.920	4.746
Current BES/Current FMB: (FY07 DON Controls)	3.273	3.861	4.774
Total Adjustments	-0.002	-0.059	0.028
Summary of Adjustments			
Inflation	0.000	-0.018	0.021
Rescissions	0.000	-0.041	0.000
Other General Provisions	0.000	0.000	0.007
Warfare Center Rates	0.000	0.000	0.000
Programmatic Changes	-0.002	0.000	0.000
Subtotal	-0.002	-0.059	0.028

Schedule:

Not Applicable

Technical:

Not Applicable

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare Systems	PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)
D. OTHER PROGRAM FUNDING SUMMARY: N/A <u>Line Item No. & Name</u> (U) Other Program Funding Summary: Not applicable. (U) Related RDT&E: Not applicable.		
E. ACQUISITION STRATEGY: * <p>This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letters, Serial N77/3U629212, dated 04 Sep 03, Serial N77/3U629205, dated 01 Apr 03, and Serial N77/1U651534, dated 30 Oct 01, COMSUBLANT/COMSUBPAC Command Capability Issues (CCIs), Virginia Class SSN Operational Requirements Document objectives, a review, assessment and prioritization of Sensor and Processor efforts and SSN force level projections for SSN688/688I, SSN21, and SSN 774 classes through FY2015. Project efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility Demonstration Models (FDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.</p>		
F. MAJOR PERFORMERS: ** NAWC, China Lake, CA NUWC, Newport, RI NASA JPL, Pasadena, CA JHU, Columbia, MD Applied EM ARETE		

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603562N/Submarine Tactical Warfare Systems		0770/Advanced Submarine Support Equipment Program (ASSEP)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	ARETE/AEM/EDO/JHU/JPL/NRL	0.000	0.786	10/04	1.250	10/05	2.430	10/06	TBD	TBD	TBD
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	NUWC Newport, RI		0.560	10/04	0.549	10/05	0.735	10/06	CONT	CONT	N/A
	WR/RC	NAWC China Lake		1.705	10/04	1.494	10/05	0.893	10/06	CONT	CONT	N/A
Licenses											0.000	
GFE	N/A	N/A									0.000	
Miscellaneous	Various	Various								CONT	CONT	N/A
Award Fees											0.000	
Subtotal Product Development			0.000	3.051		3.293		4.058		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Engineering Technical Services	C/CPFF	AT&T GSI, Vienna,VA		0.200	11/04	0.210	11/05	0.220	11/06	CONT	CONT	N/A
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.200		0.210		0.220		CONT	CONT	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems			PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equipment Program (ASSEP)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											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	
Management Support Services	C/CPFF	Various				0.210		0.314		CONT	CONT	N/A
Travel	TOs	Various		0.020		0.030		0.033		0.000	0.083	
Labor (Research Personnel)											0.000	
SBIR Assessment				0.002		0.118		0.149		CONT	CONT	
Subtotal Management			0.000	0.022		0.358		0.496		0.000	CONT	
Remarks:												
Total Cost			0.000	3.273		3.861		4.774		CONT	CONT	
Remarks:												

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Exhibit R-2, RD TEN Budget Item Justification
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EXHIBIT R-4, RDT&E Schedule Profile		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603562N/Submarine Tactical Warfare System	PROJECT NAME AND NUMBER 0770/Advanced Submarine Support Equipment Program (ASSEP)

ASSEP F0770 SCHEDULE	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Threat Warning Self Protection									
Mast Signature Reduction RCS and EO/IR Signature Reduction	Coating Selection ▲		EDM ▲	Coating Testing ▲	Alt Coating or Material R&D ▲		Alt Coating or Material Selection ▲	EDM ▲	Coating Testing ▲
Low Probability of Intercept (LPI) Receiver Special Signal Detection					Concept ▲	Performance Spec ▲	EDM ▲	Testing ▲	
Laser Detection Study						Concept ▲	Performance Spec ▲	EDM ▲	Testing ▲
Situational Awareness Enhancements									
PATRIOT Phase B (Stealth, Data Link and ThinKom Antenna)		Performance Spec ▲	ADM ▲	EDM ▲	Testing ▲				
PATRIOT Upgrades						Concept ▲		EDM ▲	Testing ▲
Automatic Identification System (AIS)	Performance Spec ▲	EDM ▲	At Sea Testing ▲						
360 Degree CMOS Imaging Technology - Advanced Camera Technology			Concept ▲	Performance Spec ▲	EDM ▲	Testing ▲			
Virtual Periscope	Performance Spec ▲	TEMPALT ▲	At Sea Testing ▲						
Alternate CADF - Antenna Technology				Concept ▲	EDM ▲	Testing ▲	Integration ▲		
Low Cost Expendable Sensor (LCES) (was Situational Awareness Buoy (Expendable))		Conceptual Design ▲	Performance Spec ▲			EDM Testing ▲			
LCES Payload Improvements					Concept ▲	Performance Spec ▲	EDM ▲	Testing ▲	
Optical Sensor Networks							Concept ▲	Performance Spec ▲	EDM ▲
Special Emitter Identification (SEI) Improvements							Concept ▲	Performance Spec ▲	EDM ▲
ISR Enhancements									
Passive Surveillance Radar (PSR) / Electromagnetic Vulnerability Server (EVS)	Conceptual Design ▲	Upgrades to design ▲	Testing ▲						
Imaging Enhancements (Fusion)				Conceptual Design ▲		EDM Testing ▲			
Offboard Sensors (UAV/UUV Payloads)			Concept Study ▲	Evaluation ▲					
Advanced EW Tuners					Concept ▲	Performance Spec ▲		EDM ▲	Testing ▲

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Exhibit R-4a, Schedule Detail		PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems			PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equip Prog (ASSEP)		
APPROPRIATION/BUDGET ACTIVITY BA-04	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Schedule Profile							
Threat Warning / Self Protection							
Mast Signature Reduction - RCS and EO/IR Coating Selection	Q1	Q1	Q1	Q1	Q1	Q1	Q1
MSR EO/IR Material Testing		Q3	Q4		Q1	Q4	Q4
LPI Ultra Wide Chirp Concept Design			Q1				
LPI Ultra Wide Chirp Develop Specification				Q1			
LPI Ultra Wide Chirp EDM					Q3		
LPI Ultra Wide Chirp Test EDM						Q3	
Laser Detection Concept Study				Q1			
Laser Detection Develop Specification					Q1		
Laser Detection Develop EDM						Q1	
Laser Detection Test EDM							Q3
Situational Awareness Enhancements							
Patriot Phase B Sub-component Fabrication							
Patriot Phase B EDM	Q4						
Patriot Phase B Test EDM		Q4					
Patriot Antenna Prototype Testing	Q3						
Automatic ID System EDM							
Automatic ID System At-sea Testing	Q3						
Advanced Camera Technology (360 degree imaging) Feasibility Study		Q2					
Advanced Camera Technology (360 degree imaging) Image Reconfiguration			Q1				
Advanced Camera Technology (360 degree imaging) EDM			Q1				
Advanced Camera Technology (360 degree Imaging) DT/OT				Q2			
Virtual Periscope At-sea Testing	Q3						
Alternate CADF Antenna Technology Concept for Slotted Spiral Ant		Q1					
Alternate CADF Antenna Technology EDM			Q1				
Alternate CADF Antenna Technology DT/OT				Q1			
Alternate CADF Antenna Technology At-Sea Testing				Q3			
Alternate CADF Antenna Technology Mast Integration					Q1		
Low Cost Expendable Sensor (LCES) Feasibility Study	Q1						
Low Cost Expendable Sensor (LCES) Develop Prototype		Q1					
Low Cost Expendable Sensor (LCES) At-Sea Testing			Q3				
Low Cost Expendable Sensor (LCES) Payload Improvements Concept			Q1				
Low Cost Expendable Sensor (LCES) Payload Improvements Design Upgrades			Q3				
Low Cost Expendable Sensor (LCES) Payload Improvements Perf Specification				Q1			
Intelligence, Surveillance, Reconnaissance Enhancements							
PSR At-Sea Testing	Q4						
EVS Fixes and Upgrades - Tempalt Preparation	Q1						
EVS Fixes and Upgrades - Integration		Q1					
AIS/EVS/PSR Packaging Feasibility Study	Q1						
Sensor Enhancements (Fusion) - Develop Concept		Q1					
Sensor Enhancements (Fusion) - Develop Specification			Q1				
Sensor Enhancements (Fusion) - EDM				Q1			
RF Imaging (360 Degree Non Scanning) ADM/EDM		Q1					
RF Imaging (360 Degree Non Scanning) Mast Integration			Q1				
RF Imaging (360 Degree Non Scanning) DT/OT				Q3			
RF Imaging (360 Degree Non Scanning) At-Ses Testing					Q4		
Offboard Sensors Concept Study	Q2						
Offboard Sensors Develop Specification		Q2					
Advanced EW Tuners Concept Studies			Q2				
Advanced EW Tuners - ADM/EDM					Q1		
Advanced EW Tuners - OT/At-Sea Testing						Q3	

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603562N Submarine Tactical Warfare System			PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		2.618	3.156	5.583	5.688	5.895	5.966	6.108
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Arctic project responds to the increased threat of Naval activity in the Littoral and continuing threat of submarine and surface ship activity in all regions of the world through the development of advanced submarine concepts. It places particular emphasis on submarine operability and mission support in unique environments. Efforts include assessment of combat system effectiveness, weapons testing, use of high frequency sonars in Arctic regions, testing of ice-capable submarine structures, and development of class specific Arctic shallow water operational guidelines. This program also provides the framework for various Research and Development (R&D) programs to conduct Test and Evaluation in the shallow water and Arctic regions.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 0603562N Submarine Tactical Warfare System	PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.618	3.156	5.583
RDT&E Articles Quantity			

Conduct ICEX mission, arctic transit mission, ICEX workup, ICEX training, and Ice Camp. Provide planning, logistics, support for Ice Camp Operations and SCICEX accommodation.

FY06 Plans:
Support Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic operability and warfighting. Plan a large ice camp in the Arctic Ocean during Spring 2007 to conduct submarine technical testing and tactical development, and to collect Arctic environmental data.

FY07 Plans:
Support Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic operability and warfighting. Coordinate and provide technical and logistic support for the Spring 2007 Ice Camp in the Arctic Ocean.

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 063562N Submarine Tactical Warfare Sys	PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
FY2006 President's Budget Controls		2.625	3.205	5.623
FY2007 President's Budget Controls		2.618	3.156	5.583
Totals Adjustments		-0.007	-0.049	-0.040
Summary of Adjustments				
Contract Support Reduction				-0.010
NWCF Civpers Efficiencies				-0.063
Small Business Innovation Research		-0.003		
Nuclear Physical Security (OSD)		0.001		
PBD 604 Inflation				0.025
PBD 606 Civpers Pay Raise Rate				0.008
Sec. 8125: Revised Economic As			-0.015	
Congressional Action 1% Reduct			-0.034	
Department of Energy Transfer		-0.002		
Cancelled Accounts Liabilities		-0.003		
		-0.007	-0.049	-0.040
Schedule:				
N/A				
Technical:				
N/A				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME PE 063562N Submarine Tactical Warfare System	PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support
<p>D. OTHER PROGRAM FUNDING SUMMARY: N/A</p> <p>E. ACQUISITION STRATEGY: * NON-ACAT Program</p> <p>F. MAJOR PERFORMERS: ** <u>Command Submarine ForceUS PacificFleet (COMSUBPAC)</u> - Develop and definitize an Arctic-Deploying side Scan Sonar replacement plan, which will deliver a significant improved qualitative view of the underside of the ICE Canopy Sighting and tracking surfaceable features of current submarines, and the future VA Class submarine.</p>		

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4			PROGRAM ELEMENT PE 063562N Submarine Tactical Warfare System			PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Ancillary Hardware Development													0.000	
Systems Engineering	WR	NSWC Carderock	0.400										0.400	
Systems Engineering		EB Corp	0.025										0.025	
Systems Engineering	WR	NSWC INDIAN HEAD	0.051										0.051	
Systems Engineering	WR	SPAWAR	0.120										0.120	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Subtotal Product Development			0.596	0.000		0.000		0.000		0.000		0.000	0.596	
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	0.000	
Remarks:														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA			PE 063562N Submarine Tactical Warfare System				1739 Submarine Special Operations Support							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVIRON Five	10.282			2.455	11/04	2.993	11/05	5.420	11/06	CONT.	CONT.	
Developmental Test & Evaluation	WR		0.015											0.015
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGA	0.200											0.200
Developmental Test & Evaluation	WR	CMDR,2nd NAVCON BRIGA	0.250											0.250
Developmental Test & Evaluation	SS/CPFF	APL/University of Washingto	3.294											3.294
Tooling														0.000
GFE														0.000
Subtotal T&E			14.041			2.455		2.993		5.420		0.000		19.489
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support		EG&G	0.481			0.153	11/04	0.153	11/05	0.153	11/06	CONT.	CONT.	
Travel			0.050			0.010	11/04	0.010	11/05	0.010	11/06	CONT.	CONT.	
Labor (Research Personnel)														0.000
SBIR Assessment														0.000
Subtotal Management			0.531			0.163		0.163		0.163		0.000		0.857
Remarks:														
Total Cost			15.168	0.000		2.618		3.156		5.583		0.000		20.942
Remarks:														

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 19 of 21)

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4				R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	16.077	21.221	21.549	30.937	30.897	30.838	30.745
2196/Design Tools, Plans & Concepts	3.862	11.721	2.149	1.518	1.518	1.527	1.507
3161/NAVSEA Tech Authority	0.000	0.000	19.400	29.419	29.379	29.311	29.238
9042/Sealion Tech Demo	8.149	0.000	0.000	0.000	0.000	0.000	0.000
9044/Document Automation of ICAS & Other Navy	2.423	0.000	0.000	0.000	0.000	0.000	0.000
9193/Total Fleet Support	1.643	0.000	0.000	0.000	0.000	0.000	0.000
9999/Total Fleet Support	0.000	9.500	0.000	0.000	0.000	0.000	0.000
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>Explore alternative surface ship force structures, advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures and advanced concepts in support of pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is a more affordable, mission capable surface ship force including ships with reduced manning, increased producibility, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.</p> <p>(U) Project 2196 - This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.</p> <p>(U) Project 3161 - This project funds a broad assortment of initiatives supporting NAVSEA Technical Authority through integrated efforts in Cross Platform Systems Development (CPSD), furthering Sea Enterprise through the development of support elements for Technical Warrant holders and meeting relevant needs of the warfare community. The areas of exploration for CPSD include surface ship concept advanced development, submarine concepts, next generation unmanned surface vehicle, high speed ships and craft, ship engineering and analysis technology center, tool integration and technical data exchange, embedded interoperability engineering, and mission capability system engineering.</p> <p>(U) Project 9042: This project funds Situation Awareness Module, related to the Sealion Craft.</p> <p>(U) Project 9044: This project funds Documentation Automation of Integrated Condition Assessment System (ICAS) Maintenance and other Navy procedures in XML format.</p> <p>(U) Project 9193: This project funds development and analysis of fleet support technologies.</p>							

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Exhibit R-2a, RDTE Project Justification
(Exhibit R-2a, page 1 of 26)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design			PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost		3.862	11.721	2.149	1.518	1.518	1.527
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops and explores alternative surface ship force structures, advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures, along with advanced concepts in support of pre-acquisition mission needs analysis, mission area analysis, and SCN and R&D planning. The objective is a more affordable, mission capable surface ship force including ships with reduced manning, increased producibility, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, and surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.

(U) This project provides the foundation for an affordable and mission capable surface ship force. It also supports the next step in the development of a transformed naval force by accomplishing the pre-milestone A (especially pre-concept decision) efforts for all potential surface ships and craft. These efforts are the required first step in the integration of total ship systems, including combat systems and hull, mechanical and electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design, construction and operational problems. A more subtle and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and our greatest potential ship design advances never realized. Designs and technologies must meet the threat. This project supports this requirement.

(U) This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.

(U) This project accomplishes the following: (1) Develops alternative surface ship force structure concepts including the ships and unmanned vehicles; (2) Evaluates the mission capability effectiveness and costs for these alternative surface fleet architectures; (3) Performs fleet warfighting / mission effectiveness assessment studies; (4) Identifies future surface ship requirements and characteristics necessary to meet future threats and support mission needs; (5) Investigates new affordable ship concepts and evaluates technologies necessary to support these concepts; (6) Provides design methods and automated design tools to develop and evaluate ship concepts; and (7) Supports development of Initial Capabilities Documents (ICD) and analogous early requirements documents for future ships. These efforts are done to support mission analysis, mission needs development and technology assessment in support of future fleet concepts and potential ship acquisition programs. These efforts are fundamental to the Navy's formulation of the future fleet.

(U) Efforts under Project 2196 transition directly to early stage ship design in PE 0603564N, Ship Preliminary Design and Feasibility Studies, and similar Program Executive Office (PEO) ship design programs. While these efforts support concept exploration and mission needs assessment for potential future ship acquisition programs, they are not direct efforts for specific, authorized shipbuilding programs. This project is the only R&D effort (Government or commercial) that supports and maintains this country's naval ship design and engineering capabilities in the area of very early stage (Concept Design) design tools, criteria, and methods.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.000	0.690	0.728	
RDT&E Articles Quantity				

(U) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, configuration, capabilities and rough order of magnitude (ROM) ship costs. Conduct pre-Milestone A ship concept studies for potential ship concepts/configurations in support of SCN planning. Assess the future ship concepts as part of potential future fleet architecture concepts.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.722	0.246	0.436	
RDT&E Articles Quantity				

(U) Total Ship Technology Assessment: Analyze the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identify, characterize and assess new and emergent technologies. Develop methodologies for assessment of benefits and impacts of technologies in total ship concepts. Support development of total ship and HM&E technology roadmaps.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.940	0.689	0.699	
RDT&E Articles Quantity				

(U) Ship Concept Design and Engineering Tools, Methods, and Criteria: Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the US Navy's Advanced Surface Ship Evaluation Tool (ASSET) surface ship synthesis/assessment models in the following areas: improve performance assessment capabilities, update and enhance capabilities to handle new ship configurations, hull form alternatives, signature reduction features, characterize advanced machinery technologies, address optimal required shipboard manning, reduced total ownership cost, and increased capabilities to determine ship size impacts of new technologies including warfare systems. Improve interoperability of Navy and shipbuilder design systems.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.100	0.000	0.000
RDT&E Articles Quantity			

(U) Future Force Formulation (Core): Continued development of methodology for force architecture alternatives and analyses. Conducted analyses of force architecture concepts that can illuminate the high level interfaces between surface ship warfare communities and other force elements such as aviation and submarines. Examined the distribution of functions between various existing and postulated ship classes, the interface between diverse force elements such as platform configuration and mission, network connectivity, force level logistics and concept of operations, with a particular focus on total force level cost, performance and risk.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.000	0.000	0.000
RDT&E Articles Quantity			

(U) Future Force Formulation (Demo): Conducted first Future Force Formulation case study, selecting a limited case of force architecture for practical execution and feedback into the process development. Selection of a family of ships within a community will be made, and the developing methodology of Future Force Formulation will be exercised in a one year study with deliverables for presentation before decision authority for a pre-MS A project.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.100	0.246	0.286
RDT&E Articles Quantity			

(U) Mission Systems Interface Development and Demonstration: This task funds requirements development for ships and technologies to counter threats such as asymmetric, peer and littoral enemies. The transformation of the surface fleet starts with highly capable, multi-mission destroyers, advanced cruisers, and a new breed of reconfigurable and/or focused mission ships designed to defeat enemy littoral defenses including mines, small boats, and submarines, ultimately ensuring maritime access in any environment. This effort focuses on requirements for ships with tailored, modularized mission systems packages designed to accommodate a variety of naval missions. It includes liaison with DARPA and SBIR experimentation.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.425	0.000	
RDT&E Articles Quantity	N/A	N/A	N/A	

(U) Future Ship and Force Concept Design:
Center for Innovation in Ship Design - Revitalize design, engineering education and research to ensure engineering capability to develop and design innovative, affordable, mission capable naval ships which utilize the latest technologies. These efforts will focus on ship hull form, structure and propulsion advanced development R&D. PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under High Speed Ships and Craft/Alternative Power Systems - Alternative Power Systems.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.278	0.000	
RDT&E Articles Quantity				

(U) Future Submarine and Submersible Concept Design:
Hydrodynamic/Hydroacoustic Technology Center - Provides Government activities, shipbuilders, academia and contractors the following: high performance computing systems; commercial and research software libraries; classified and unclassified connectivity; high end data visualization; and collaboration tools/Centralized data repository. PB06 funded Technical Authority starting in FY 2006 with funds in Project 2196. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under Ship Engineering and Analysis Technology Center.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.707	0.000	
RDT&E Articles Quantity				

(U) Future Ship and Force Concept Design:
High Speed Ships and Craft - Technology, Design Criteria and Process Development - Engineering development for transformational capabilities to include design processes, tool design standards and criteria for high speed ships and craft. PB06 funded Technical Authority starting in FY 2006 with funds in Project 2196. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under High Speed Ships and Craft/Alternative Power Systems - High Speed Ships and Craft.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts

B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.283	0.000	
RDT&E Articles Quantity	N/A	N/A	N/A	

(U) Future Ship and Force Concept Design:
 Next Generation USV - Development, demonstration and deployment of Unmanned Surface Vehicles (USVs) and possible air droppable USVs. Achievement of full war fighting utility and full mission package capability will require innovations in vehicle design, sensors, autonomous behavior and modular payloads. Focus on utility in surface warfare especially new ship classes with improved deployable vehicle capabilities such as DD(X), LCS and CG(X). PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond and this effort moves with the funding to Project 3161 under Next Generation USV.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.482	0.000	
RDT&E Articles Quantity				

(U) Ship Design and Certification Tools:
 Ship Certification Tools - Evaluation tools to certify the safety and mission capability of Navy ships. Top-Level metrics & monitoring of certification capability. Technical coordination of tool development efforts sponsored with focus on surface warfare and submarine warfare needs. PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under Tool Integration and Technical Data Exchange.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.464	0.000	
RDT&E Articles Quantity				

(U) Future Ship and Force Concept Design:
 Ship Concept Advanced Development - Directly supports the Navy's ability to understand and quantify mission requirements impacts on surface warfare assets; Pre-Milestone A ship and craft design and analysis to determine ROM cost and feasibility of new technologies being incorporated into ship designs; performs risk mitigation engineering for ongoing acquisition programs such as LCS (especially future flights) and CG(X). PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under Ship Concept Advanced Development.

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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.311	0.000	
RDT&E Articles Quantity	N/A	N/A	N/A	

(U) Ship Design and Certification Tools:
Engineering and Technical Data Exchange (formerly: Ship Development Systems Interoperability) - Develop and implement a framework of standardized interfaces for ship development and engineering systems: built upon ISO 10303 STEP content standards and XML format specifications, CAD to CAD and CAD to CAE/Vis/Sim interfaces; align with Technical Authority Warrants; and eliminate need for custom interface to each program's IDE for design review and certification (recurring NRE). Focus on surface warfare, expeditionary warfare and submarine warfare issues initially. PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under Tool Integration and Technical Data Exchange.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.990	0.000	
RDT&E Articles Quantity				

(U) Future Submarine and Submersible Concept Design:
Submarine Design - Transform the submarine fleet with dramatic increases in mission effectiveness. Innovate the "Navy after Next" concepts. Develop knowledge to invest smartly in technology. Develop ship concept studies and evaluate technologies to define the Next Generation Submarine. Common SSN-SSBN Hull and Payload Modularity. PB06 funded Technical Authority in Project 2196 starting in FY 2006. PB06 also established Project 3161/NAVSEA Technical Authority in FY 2007 and beyond, and this effort moves with the funding to Project 3161 under Submarine Concepts.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	4.088	0.000	
RDT&E Articles Quantity				

(U) Interoperability Engineering:
Embedded Interoperability Engineering - This effort establishes and executes a dedicated process for evaluating the interoperability performance of complex warfare systems early in the acquisition cycle. Interoperability engineering assessments conducted prior to the certification phase will ensure fewer mission critical system failures that degrade the warfighting capability that is ultimately fielded. This effort will apply systems engineering techniques and processes to delivery of CAPSTONE warfighting capability and the Littoral Combat Ship (LCS) Warfare Systems. FY 2006 funding is a follow-on to effort funded in FY05 in PE 0603582N for REAGAN Strike Force Interoperability and continues in 2007 and beyond in Project 3161 under Embedded Interoperability Engineering.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts
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B. Accomplishments/Planned Program (Cont.)

Mission Capability Systems Engineering	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	1.822	0.000	
RDT&E Articles Quantity	N/A	N/A	N/A	

(U) Interoperability Engineering:
 Mission Capability Systems Engineering - This project funds development of force level systems engineering criteria and guidance at the systems of systems (SoS) and Family of Systems (FoS) level based on characterization, quantification, assessment, and validation of mission capabilities. FY06 effort will evaluate the SoS/FoS architectures, and artifacts in advance of SRR, SFR, PDR, and CDR reviews associated with critical mission capability system deliveries tied to major platforms, and the Open Architecture Track Manager (OATM) that the Navy's Technical Authority for Warfare Systems has determined must receive independent technical risk assessments. These efforts will provide the assessment to ensure Navy's ability to build to a "system of systems" capability. Continued funding for this effort in FY07 and beyond is included in Project 3161 under Mission Capability Systems Engineering.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																																				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts																																					
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Funding:</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>FY 2006 President's Budget:</td> <td style="text-align: right;">3.687</td> <td style="text-align: right;">11.899</td> <td style="text-align: right;">22.215</td> </tr> <tr> <td>FY 2007 President's Budget:</td> <td style="text-align: right;">3.862</td> <td style="text-align: right;">11.721</td> <td style="text-align: right;">2.149</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">0.175</td> <td style="text-align: right; border-top: 1px solid black;">-0.178</td> <td style="text-align: right; border-top: 1px solid black;">-20.066</td> </tr> <tr> <td colspan="4" style="padding-left: 20px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 40px;">General provisions</td> <td style="text-align: right;">-0.038</td> <td style="text-align: right;">-0.054</td> <td style="text-align: right;">0.13</td> </tr> <tr> <td style="padding-left: 40px;">Programmatic Changes</td> <td style="text-align: right;">0.213</td> <td></td> <td style="text-align: right;">-20.000</td> </tr> <tr> <td style="padding-left: 40px;">Revised rates & inflation indices</td> <td></td> <td style="text-align: right;">-0.124</td> <td style="text-align: right;">-0.796</td> </tr> <tr> <td style="padding-left: 40px; border-top: 1px solid black;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">0.175</td> <td style="text-align: right; border-top: 1px solid black;">-0.178</td> <td style="text-align: right; border-top: 1px solid black;">-20.666</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule: PB06 includes Technical Authority funds in Project 2196 for FY 2006, and establishes Project 3161/NAVSEA Technical Authority for FY 2007 and future with Technical Authority funds moved to that project.</p> <p style="margin-top: 40px;">Technical:</p>				Funding:	FY 2005	FY 2006	FY 2007	FY 2006 President's Budget:	3.687	11.899	22.215	FY 2007 President's Budget:	3.862	11.721	2.149	Total Adjustments	0.175	-0.178	-20.066	Summary of Adjustments				General provisions	-0.038	-0.054	0.13	Programmatic Changes	0.213		-20.000	Revised rates & inflation indices		-0.124	-0.796	Subtotal	0.175	-0.178	-20.666
Funding:	FY 2005	FY 2006	FY 2007																																				
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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
(U) Related RDT&E									
(U) PE 0603512N (Carrier Systems Development)	7.874	10.434	9.908	7.930	7.629	7.149	4.122		
(U) PE 0603513N (Shipboard Systems Component Development)	1.899	2.182	1.647	1.924	1.949	1.970	1.987		
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)	0.000	10.874	13.419	7.406	1.600	0.729	1.022		
(U) PE 0604300N (SC21 Total Ship Systems Engineering)	206.800	204.937	140.698	79.660	47.152	46.598	55.927		
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)	13.091	5.525	8.580	8.249	5.811	3.975	8.521		
(U) PE 0603582N (Combat System Integ/Strike Force Interoperability)	76.651	76.975	68.603						

E. ACQUISITION STRATEGY:

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments.

F. MAJOR PERFORMERS:

Field Activities & Locations - Work Performed:

- NSWC Carderock, Bethesda, MD - Future ship open architectures, advanced ship concepts, ship & ship system technology assessments, design & engineering tool upgrades
- NSWC Dahlgren, Dahlgren, VA - Future force architectures, mission effectiveness analyses, analytical tool development
- SPAWAR, San Diego, CA - C4ISR systems concept development & integration

Contractors & Locations - Work Performed

- TBD - Systems engineering analyses, trade studies, ship concept design, cost impact analysis
- TBD - Software, tools development

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N /BA-4			0603563N/Ship Concept Advanced Design			2196/Design Tools, Plans, and Concepts						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Systems Engineering	various	Other Various Contractors	57.446	1.166	various	2.560	various	0.334	various	Continuing	Continuing	
Engineering Development	WX & RX	NAVSEA, Dahlgren Div, Dahlgren, VA	2.905	0.901	various	3.000	various	0.835	various	Continuing	Continuing	
	WX&RX	NSWC PHD				1.750	various					
Demonstration & Evaluation	WX & RX	NAVSEA, Carderock Div, West Bethesda, MD	33.846	1.163	various	4.201	various	0.860	various	Continuing	Continuing	
	WX & RX	SPAWAR				0.150	various	0.100	various	Continuing	Continuing	
Licenses											0.000	
Tooling	WX\RX\PL	SPAWAR	9.779	0.612	various					0.000	10.391	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			103.976	3.842		11.661		2.129		0.000	121.608	
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:												

Exhibit R-2a, RD TEN Project Justification

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

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RD&E, N /BA-4			0603563N/Ship Concept Advanced Design			2196/Design Tools, Plans, and Concepts						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.020		0.060		0.020		Continuing	Continuing	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.020		0.060		0.020		0.000	0.100	
Remarks:												
Total Cost			103.976	3.862		11.721		2.149		0.000	121.708	
Remarks:												

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Exhibit R-2a, RD&E Project Justification
(Exhibit R-2a, page 12 of 26)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME															
RDT&E, N /BA-4					0603563N/Ship Concept Advanced Design								2196/Design Tools, Plans, and Concepts															
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Engineering Milestones																												
Pre-MS A Ship Concept Studies																												
Ship Synthesis Modeling Tool																												
Extension to Small & Alt Hull Modular Framework & Interface Interface to Performance																												
Commencement of Early Stage Multi Discipline Eval Model																												
Initial Trial & Dev of Multi-disciplinary Evaluation Model																												
Capability to Assess Alt & Adv Hull Forms																												
Commence Force Architecture Methodology																												
Force Architecture Including Futures & Force Structure Alt																												
Initial Open Systems Architecture & other Technology Assessments																												
Assessment of Technology Benefits																												
Technology Management & Cost Assessment Methods																												
PB06 projects These projects move to 3161 in FY07																												

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design		PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		0.000	0.000	19.400	29.419	29.379	29.311	29.238
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A. (U) Mission Description and Budget Item Justification: This project has been established to support NAVSEA Technical Authority through coordinated, collaborative, cross platform systems development resulting in advanced capabilities across NAVSEA business lines through reuse, adaptation and extension of processes, procedures, and tools necessary to develop and explore alternative surface ship and submarine force structures; the advanced submarine, surface ship & unmanned surface vehicles concepts; and the potential technologies necessary for ForceNet implementation and advanced warfare systems development and integration to support these force structures and advanced concepts as part of pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is the coordination of ongoing early stage concept design and development efforts for cross platform applicability to result in a more affordable, mission capable and interoperable surface ship and submarine force including ships and submarines with reduced manning, increased producibility, reduced operating and support costs, and greater utilization of the latest technology.

(U) Efforts under Project 3161 enhance ongoing efforts within Project 2196 and transition directly to early stage ship design for Ship and Submarine Preliminary Design and Feasibility Studies and other Program Executive Office (PEO) ship and submarine design programs. While these efforts support concept exploration and mission needs assessment for potential future ship and submarine acquisition programs, they are not direct efforts for specific, authorized shipbuilding programs. This project is the only R&D effort (Government or commercial) that provides a coordinated, collaborative approach to the development of cross platform naval ship, submarine and weapon system design and engineering capabilities in the areas of design tools, criteria, and methods.

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 15 of 26)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.332	
RDT&E Articles Quantity				

(U) Ship Concept Advanced Development: Directly supports the Navy's ability to understand and quantify mission requirements impacts on surface warfare assets; Pre-Milestone A ship and craft design and analysis to determine ROM cost and feasibility of new technologies being incorporated into ship designs; performs risk mitigation engineering for ongoing acquisition programs such as LCS (especially future flights) and CG(X). Perform Ship Concept studies and analysis, Mission Effectiveness Assessments, and Mission Systems Development and Assessments. Outline implementation of concepts, techniques, and tools that can substantially reduce surface ship operating and procurement costs, provide additional or novel capabilities, and/or alter future force level criteria decision making.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	3.178	
RDT&E Articles Quantity				

(U) Submarine Concepts (formerly Submarine Design): Transform the submarine fleet with dramatic increases in mission effectiveness. Innovate the "Navy after Next" concepts. Develop knowledge to invest wisely in technology. Develop ship concept studies and evaluate technologies to define the Next Generation Submarine, common SSN-SSBN Hull and Payload Modularity. Develop concepts and outline implementation of techniques, tools, policies and procurements that can substantially reduce submarine acquisition and operating costs, provide additional/novel capabilities, and/or alter future force level criteria decision making, with coordination on common technologies to surface ships

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.164	
RDT&E Articles Quantity				

(U) Next Generation USV: Development, demonstration and deployment of Unmanned Surface Vehicle (USVs) and possible air droppable USVs. Achievement of full war fighting utility and full mission package capability will require innovations in vehicle design, sensors, autonomous behavior and modular payloads. Focus on utility in surface warfare, especially in new ship classes with improved deployable vehicle capabilities such as DD(X), LCS and CG(X). Investigate concepts and develop prototypes, and conduct experiments on next generation USVs that will substantially enhance surface ship capabilities while reducing acquisition and operational costs and reducing personnel risk.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.381
RDT&E Articles Quantity			

(U) High Speed Ships and Craft/Alternative Power Systems: High Speed Ships and Craft - Technology, Design Criteria and Process Development - Engineering development for transformational capabilities to include design processes, tools design standards and criteria for high speed ships and craft. Investigate concepts for future high speed ships and craft that will provide new capabilities and embody technologies tracked and recommended by SurfTech.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.587
RDT&E Articles Quantity			

(U) High Speed Ships and Craft/Alternative Power Systems: Alternative Power Systems (formerly Center for Innovation in Ship Design) - Revitalize design, engineering education and research to ensure engineering capability to develop and design innovative, affordable, mission capable naval ships which utilize the latest technologies including cost-effective alternative power and propulsion. In support of CNO Guidance, these efforts will focus on ship hull form, structure and propulsion advanced development R&D. Investigate concepts for future high speed ships and craft including development and assessment of alternative power and propulsion systems for surface vessels.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.790
RDT&E Articles Quantity			

(U) Ship Engineering & Analysis Technology Center (formerly Hydrodynamic/Hydroacoustic Technology Center (H/HTC)): Provides Government activities, shipbuilders, academia and contractors the following: high performance computing systems; commercial and research software libraries; classified and unclassified connectivity; high end data visualization; and collaboration tools/Centralized data repository. Provide the framework of continued world class computing upon which specific task funding will build.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.788
RDT&E Articles Quantity			

(U) Tool Integration and Technical Data Exchange: Ship Certification Tools - Evaluation tools to certify the safety and mission capability of Navy ships. Top-Level metrics & monitoring of certification capability. Technical coordination of tool development efforts sponsored with focus on surface warfare and submarine warfare needs. Define and implement an integrated strategy for the suite of tools used by NAVSEA in support of ship certification activities.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.748
RDT&E Articles Quantity			

(U) Tool Integration and Technical Data Exchange: Engineering and Technical Data Exchange - Develop and implement a framework of standardized interfaces for ship development and engineering systems: build upon ISO 10303 STEP content standards and XML format specifications, CAD to CAD and CAD to CAE/Vis/Sim interfaces; align with Technical Authority Warrants; and eliminate need for custom interface to each program's IDE for design review and certification (recurring NRE). Focus on surface warfare, expeditionary warfare and submarine warfare issues initially. Provide increased efficiency in development and certification processes by standardizing data exchange methods and protocols.

	FY 05	FY 06	FY 07
Embedded Interoperability Engineering			
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.716
RDT&E Articles Quantity			

(U) Embedded Interoperability Engineering:
 Embedded Interoperability Engineering - This effort establishes and executes a dedicated process for evaluating the interoperability performance of complex warfare systems early in the acquisition cycle. Interoperability engineering assessments conducted prior to the certification phase will ensure fewer mission critical system failures that degrade the warfighting capability that is ultimately fielded. FY07-11 effort will apply systems engineering techniques and processes to warfighting capabilities planned for DDG Modernization, Open Architecture Combat Systems, and Littoral Combat Ship (LCS) Warfare Systems. Specific focus will be on ensuring force interoperability considerations are included to meet safety, training and human system integration factors are integrated in program acquisition plans.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority

B. Accomplishments/Planned Program

Mission Capability Systems Engineering	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.716	
RDT&E Articles Quantity				

(U) Mission Capability Systems Engineering:
 Mission Capability Systems Engineering - This project funds development of force level systems engineering criteria and guidance at the systems of systems (SoS) and Family of Systems (FoS) level based on characterization, quantification, assessment, and validation of mission capabilities. FY07-11 effort will evaluate the SoS/FoS architectures, and artifacts in advance of SRR, SFR, PDR, and CDR reviews associated with critical mission capability system deliveries that the Navy's Technical Authority for Warfare Systems has determined must receive independent technical risk assessments. These efforts will ensure that Navy decision makers will have standards and tools in place i.e. force level FoS/SoS architectures in place to conduct affordable analyses of alternatives tied to mission capabilities for warfare systems.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

(U)

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

(U)

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
(U) Related RDT&E									
(U) PE 0603512N (Carrier Systems Development)	7.874	10.434	9.908	7.930	7.629	7.149	4.122		
(U) PE 0603513N (Shipboard Systems Component Development)	1.899	2.182	1.647	1.924	1.949	1.970	1.987		
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)	0.000	10.874	13.419	7.406	1.600	0.729	1.022		
(U) PE 0604300N (SC21 Total Ship Systems Engineering)	206.800	204.937	140.698	79.660	47.152	46.598	55.927		
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)	13.091	5.525	8.580	8.249	5.811	3.975	8.521		
(U) PE 0603582N (Combat System Integration/Strike Force Interoperability)									

E. ACQUISITION STRATEGY:

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship and submarine acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments. This program supports the NAVSEA Technical Warrant Holders by providing validated engineering tools, methods, and criteria for ship, submarine and weapon system concept designs and assessments while fostering collaboration and coordination of efforts resulting in more effective use of funding.

F. MAJOR PERFORMERS:

Field Activities & Locations - Work Performed:

- NSWC Carderock, Bethesda, MD - Future ship open architectures, advanced ship concepts, ship & ship system technology assessments, design & engineering tool upgrades
- NSWC Dahlgren, Dahlgren, VA - Future force architectures, mission effectiveness analyses, analytical tool development
- SPAWAR, San Diego, CA - C4ISR systems concept development & integration

Contractors & Locations - Work Performed

- TBD - Systems engineering analyses, trade studies, ship concept design, cost impact analysis
- TBD - Software, tools development

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N /BA-4			0603563N/Ship Concept Advanced Design			3161/NAVSEA Technical Authority						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Systems Engineering	various	Various Contractors						4.800	various	Continuing	Continuing	
	WX&RX	NSWC, NUWC						7.500	various	Continuing	Continuing	
Engineering Development	WX&RX	NSWC, NUWC						4.500	various	Continuing	Continuing	
Demonstration & Evaluation	WX&RX	NSWC						1.200	various	Continuing	Continuing	
	WX&RX	SPAWAR						1.300	various			
Licenses											0.000	
Tooling										0.000	0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		19.300		0.000	19.300	
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:												

Exhibit R-2a, RD TEN Project Justification

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDTE, N /BA-4			0603563N/Ship Concept Advanced Design			3161/NAVSEA Technical Authority						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.000		0.000		0.100		Continuing	Continuing	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.100		0.000	0.100	
Remarks:												
Total Cost			0.000	0.000		0.000		19.400		0.000	19.400	
Remarks:												

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Exhibit R-2a, RDTE Project Justification
(Exhibit R-2a, page 23 of 26)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME													
RDT&E, N /BA-4					0603563N/Ship Concept Advanced Design										3161/NAVSEA Technical Authority													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Engineering Milestones																												
Ship Concepts Advanced Development									██████████																			
Submarine Concepts									██████████																			
Next Generation USV									██████████																			
High Speed Ships and Craft and Alternative Power Systems									██████████																			
Ship Engineering and Analysis Technology Center									██████████																			
Tool Integration and Technical Data Exchange									██████████																			
Embedded Interoperability Engineering									██████████																			
Mission Capability Systems Engineering									██████████																			

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS
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CONGRESSIONAL PLUS-UPS:

	FY 06			
9816N				
Autonomous Maritime Navigation Program	6.800			

(U) AMN involves development of sensor fusion processing; development of automated data interpretation processing; development of intelligent autonomy and control , integration of these components into a fully autonomous dynamic navigation planning and operations capability, and integration into Navy test craft for system maturing and testing. System by design will be portable to other military platforms, both unmanned and manned, to enable very high levels of autonomous operations to reduce manpower requirements and improve both war fighter safety and conditions.

	FY 06			
9817N				
Security Video Distribution System	1.000			

Congressional add for a security video distribution system.

	FY 06			
9817N				
Video Analysis Research and Development	1.700			

Congressional add for video analysis research and development.

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EXHIBIT R-2, RDT&E Budget Item Justification				FY 2007 President's Budget (\$M)				DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA-4				R-1 ITEM NOMENCLATURE PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost		0.000	26.615	21.314	13.687	0.588	0.493	0.467	
0408 Ship Development (ADV)		0.000	0.000	0.558	0.588	0.588	0.493	0.467	
3127 Sea Base to Shore Connectors		0.000	14.198	13.380	13.099	0.000	0.000	0.000	
3131 Intratheater Connectors		0.000	4.775	0.000	0.000	0.000	0.000	0.000	
3132 Intertheater Connectors		0.000	7.642	7.376	0.000	0.000	0.000	0.000	

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Initial Capabilities and potential Material Approach Alternatives (ship concepts), identified in PE 0603563N (Ship Concept Advanced Design) or other efforts are transitioned to and further developed by this program after an Initial Capabilities Document (ICD) is approved, and usually after an approved Concept Decision (CD). This project performs the Ship Feasibility Studies, including development of alternative ship concepts, required to address and support the Analysis of Alternatives (AOA) for new surface ships in the Navy Shipbuilding Plan. Under Acquisition Reform for new ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process. This project performs impact studies of warfare, hull, mechanical and electrical subsystems on advanced ship designs; enhances ship/ship system design methodologies that support feasibility studies; develops and upgrades the engineering tools, especially ship synthesis models, used to support AOA studies and other engineering efforts accomplished during the feasibility study phase; evaluates advanced and alternative technologies and develops total ship concepts with these technologies to assess their suitability; develops the initial documentation and design methodology required by the government for the design of surface ships in the Shipbuilding Program in accordance with the requirements of the DoD 5000; supports the development of the Capabilities Development Document (CDD) and other documentation required at Milestone A (which is usually program initiation for shipbuilding programs) and accomplishes other efforts for future ship acquisitions in support of a Milestone A. Ship Feasibility Study products include a description of the alternative ships' principal characteristics and mission critical subsystems, weight estimates, general arrangement sketches, technical risk assessments, and Life Cycle Cost estimate (LCCE). The objective of this project is to provide the decision makers with feasible, affordable alternatives to be selected for further development during the Total Ship Systems (previously called Contract and/or Functional) Design phase under PE 0604567N.

Project Unit Descriptions are as follows:

(0408) Ship Development (ADV) - This project supports the evaluation of advanced and alternative technologies through the Surface Ship Technology (SURFTECH) process for suitability for meeting total ship concepts capability needs. The objective of this project is to provide the decision makers with feasible, affordable alternatives to be selected for further development.

(3127) Sea Base to Shore Connectors - This project supports continued development of AoA studies, and all technical, programmatic and contractual documentation required for the acquisition of the Sea Base Connector. The major effort is the engineering development of the technical and contractual definition of the Sea Base Connector design with sufficient details for the prospective offeror to make a sound estimate of construction cost and schedule. It also serves as the technical definition from which the offeror will develop the detail design and testing package required to build and test the craft.

(3131) Intratheater Connectors - Intratheater connectors, capable of self-deploying to the theater of operations, provide the air and surface means to move forces and supplies over operational distances within a theater. Intratheater connectors provide the JFC a mobility asset that enables rapid force closure to the sea base from advanced bases, movement of logistics, ship-to-ship and ship-to-shore replenishment, and in appropriate threat environments, the maneuver of forces to the shore. FY07 through FY11 requirements realigned to new PE 0208058N, Project 3131.

(3132) Intertheater Connectors - concept studies in support of ship system that will provide a highly flexible sea lift capability to quickly bring war material and strike aircraft from CONUS to the Seabase and secondarily provide high speed lift within the sea base.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				FY 2007 President's Budget (\$M)			DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDTEN/BA-4		PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES			0408 Ship Development (ADV)				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			0.000	0.000	0.558	0.588	0.588	0.493	0.467
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(0408) Ship Development (ADV):

This project supports the evaluation of advanced and alternative technologies through the Surface Ship Technology (SURFTECH) process for suitability for meeting total ship concepts capability needs. The objective of this project is to provide the decision makers with feasible, affordable alternatives to be selected for further development.

In support of surface ship advanced technology development and transformation, the surface ship community has instituted a technology evaluation process to coordinate, identify, prioritize, and integrate technology insertion and development efforts and assist RDT&E community efforts to initiate appropriate technology development. The current acquisition guidelines require the development of critical technologies after Milestone A. If significant gap analysis, planning, and early development efforts are not conducted in parallel with Concept Development the Navy will not be able to provide broad, cross-platform direction to surface navy development efforts in an effective manner and will not effectively leverage limited resources to quicken the pace of both development and transition of critical mission technologies for timely acquisition.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 OSD (\$M)		DATE:													
				February 2006													
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME															
RDTEN/BA-4	PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	0408 Ship Development (ADV)															
B. Accomplishments/Planned Program																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">(0408) Ship Development (ADV)</th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.558</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>						(0408) Ship Development (ADV)	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.558	RDT&E Articles Quantity	0	0	0
(0408) Ship Development (ADV)	FY 05	FY 06	FY 07														
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.558														
RDT&E Articles Quantity	0	0	0														
<div style="border: 1px solid black; padding: 10px; min-height: 100px;"> <p>As new ship concepts with desired mission capabilities are developed, SURFTECH will continuously identify, prioritize, and integrate technology insertion and development efforts and assist the RDT&E community efforts to initiate appropriate technology development. SURFTECH will provide continuous analysis of and feedback to ongoing technology development efforts to ensure project relevance and timely transition to meet acquisition schedules, which will be documented in the Technology Plan.</p> </div>																	

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EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 OSD (\$M)	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	PROJECT NUMBER AND NAME 0408 Ship Development (ADV)	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
President's Budget 2006	0.000	0.000	0.000
President's Budget 2007	<u>0.000</u>	<u>0.000</u>	<u>0.558</u>
Total Adjustments	0.000	0.000	0.558
Summary of Adjustments			
Programmatic Changes	0.000	0.000	0.556
Revised rates & inflation indices	<u>0.000</u>	<u>0.000</u>	<u>0.002</u>
Total Adjustment	0.000	0.000	0.558
Schedule:			
See R4/R4A Schedule.			
Technical:			
Not Applicable			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 OSD (\$M)							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					PROJECT NUMBER AND NAME 0408 Ship Development (ADV)			
D. Other Program Funding Summary		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	To Complete	Total Cost
N/A										
(U) Related RDT&E:										
N/A										
E. Acquisition Strategy:										
F. Major Performers:										
Field Activities & Locations - Work Performed										
TBD										
Contractors & Locations - Work Performed										
TBD										

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CLASSIFICATION:

FY 2007 OSD (\$M)								DATE: February 2006						
Exhibit R-3 Cost Analysis			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					0408 Ship Development (ADV)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Ancillary Hardware Development													0.000	
Aircraft Integration													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			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Development Support													0.000	
Software Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data	Various	Various								0.100	2 QTR	0.383	0.483	
Studies & Analyses	Various	Various								0.400	1 QTR	1.531	1.931	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.500		1.914	2.414	
Remarks:														

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FY 2007 OSD (\$M)								DATE: February 2006						
Exhibit R-3 Cost Analysis (page 2)			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					0408 Ship Development (ADV)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													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	0.000	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program management Support	Various	Various								0.058	1 QTR	0.222	0.280	
Travel													0.000	
Transportation													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.058		0.222	0.280	
Remarks:														
Total Cost			0.000	0.000		0.000		0.000		0.558		2.136	2.694	
Remarks:														

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					FY 2007 OSD (\$M)				DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT& BA-4			PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUD			PROJECT NUMBER AND NAME 0408 Ship Development (ADV)				
Schedule Profile			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Concept/Tech Development Analysis					1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Initial Technology Plan					3rd Qtr					
Technology Plan Updates						2nd Qtr	2nd Qtr	2nd Qtr	2nd Qtr	

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EXHIBIT R-2a, RDT&E Project Justification				FY 2007 President's Budget (\$M)			DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES			PROJECT NUMBER AND NAME 3127 Sea Base to Shore Connectors				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			0.000	14.198	13.380	13.099	0.000	0.000	0.000
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(3127) Sea Base to Shore Connectors:

Provides the surface assault portion of the Joint Expeditionary Maneuver Warfare tactical solution set requirement to project, sustain, retrograde and re-employ joint combat power from the sea and Sea Base, independent of tides, water depth, underwater obstacles, or beach gradient. Provides the functional replacement for LCAC SLEP whose SLEP extended service life ends beginning in 2014. The program is currently developing an Initial Capabilities Document.

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EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 President's Budget (\$M)			DATE: February 2006																			
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	PROJECT NUMBER AND NAME 3127 Sea Base to Shore Connectors																						
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(3127) Sea Base to Shore Connectors		FY 05	FY 06	FY 07	FY 08																			
Accomplishments/Effort/Subtotal Cost		0.000	14.198	13.380	13.099																			
RDT&E Articles Quantity		0	0	0	0																			
<div style="border: 1px solid black; padding: 5px;"> <p>Complete ICD in FY 05 Start and Complete AoA in FY 06 Start Concept Refinement in FY 06: Refine the initial concept and develop a technology development strategy. The ICD and AoA shall guide the Concept Refinement. Start Capability Development Document (CDD) in FY 06: CDD outlines an affordable increment of militarily useful, logistically supportable and technically mature capability. Start and Complete Technology Development in FY 07: Reduce technology risk and determine the appropriate set of technologies to be integrated into a full system.</p> </div>																								

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EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 President's Budget (\$M)	DATE: February 2006																																												
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<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: right;">FY 2005</th> <th style="width: 10%; text-align: right;">FY 2006</th> <th style="width: 10%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td> President's Budget 2006</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">14.415</td> <td style="text-align: right;">13.849</td> </tr> <tr> <td> President's Budget 2007</td> <td style="text-align: right;"><u>0.000</u></td> <td style="text-align: right;"><u>14.198</u></td> <td style="text-align: right;"><u>13.380</u></td> </tr> <tr> <td> Total Adjustments</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.217</td> <td style="text-align: right;">-0.469</td> </tr> <tr> <td> Summary of Adjustments</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Programmatic Changes</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.550</td> </tr> <tr> <td> Revised rates & inflation indices</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.081</td> </tr> <tr> <td> Sec 8125 Revised Economic Assumptions</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.066</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td> Congressional Action 1% Reduction</td> <td style="text-align: right;"><u>0.000</u></td> <td style="text-align: right;"><u>-0.151</u></td> <td style="text-align: right;"><u>0.000</u></td> </tr> <tr> <td> Total</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.217</td> <td style="text-align: right;">-0.469</td> </tr> </tbody> </table> <p>Schedule: Not Applicable</p> <p>Technical: Not Applicable</p>					FY 2005	FY 2006	FY 2007	Funding:				President's Budget 2006	0.000	14.415	13.849	President's Budget 2007	<u>0.000</u>	<u>14.198</u>	<u>13.380</u>	Total Adjustments	0.000	-0.217	-0.469	Summary of Adjustments				Programmatic Changes	0.000	0.000	-0.550	Revised rates & inflation indices	0.000	0.000	0.081	Sec 8125 Revised Economic Assumptions	0.000	-0.066	0.000	Congressional Action 1% Reduction	<u>0.000</u>	<u>-0.151</u>	<u>0.000</u>	Total	0.000	-0.217	-0.469
	FY 2005	FY 2006	FY 2007																																												
Funding:																																															
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification							FY 2007 President's Budget (\$M)			DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME			
RDTEN/BA-4		PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					3127 Sea Base to Shore Connectors			
D. Other Program Funding Summary		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	To Complete	Total Cost
SCN 0204411N Surface Connector (5112)		0.000	0.000	0.000	0.000	0.000	98.000	207.080		305.080
(U) Related RDT&E:										
0604567 Sea Base Connector (3133)		0.000	0.000	0.000	9.466	20.001	9.946	2.019	0.000	41.432
0604567 Sea Base Connector (1803)		1.673	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.673
E. Acquisition Strategy:										
FY05 - ICD, FY06 - AoA, FY07 CDD, FY07 Concept Refinement, FY07 Technology Development										
F. Major Performers:										
Field Activities & Locations - Work Performed										
NSWC Philadelphia, Phil. PA.		Systems Engineering - Propulsion Systems								
NSWC Panama City, FL		Systems Engineering - Hull, Mechanical & Electrical								
Contractors & Locations - Work Performed										
TBD										

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Exhibit R-3 Cost Analysis										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT							PROJECT NUMBER AND NAME				
RDT&E, N / BA-4			PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES							3127 Sea Base to Shore Connectors				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Ancillary Hardware Development													0.000	
Aircraft Integration													0.000	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering	Various	Various						5.755	11/05	5.682	11/06	5.400	16.837	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.000	0.000		0.000		5.755		5.682		5.400	16.837	
Remarks:														
Development Support		NSWC PC						3.983		3.579		3.486	11.048	
Software Development	C/CPAF							3.000	01/05	2.680	01/06	2.760	8.440	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
Studies & Analyses													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.000		0.000		6.983		6.259		6.246	19.488	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT						PROJECT NUMBER AND NAME				
RDT&E, N / BA-4				PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES						3127 Sea Base to Shore Connectors				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		NSWC PC						1.100		1.069		1.073	3.242	
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		1.100		1.069		1.073	3.242	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program management Support	C/CPAF							0.360	10/05	0.370	10/06	0.380	1.110	
Travel													0.000	
Transportation													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		0.360		0.370		0.380	1.110	
Remarks:														
Total Cost			0.000	0.000		0.000		14.198		13.380		13.099	40.677	
Remarks:														

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT& BA-4		PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY			PROJECT NUMBER AND NAME 3127 Sea Base to Shore Connectors			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Acquisition Milestones				3Q	4Q		2Q	
Contract Award (construction et...)							2Q	
Concept/Tech Development			1Q-4Q	1Q-4Q	1Q-4Q			
Initial Capabilities Document		2Q-4Q	1Q					
Analysis of Alternatives			1Q-2Q					
Concept Refinement			3Q-4Q					
Capabilitly Development Document				1Q-3Q				
Preliminary Design				2Q-4Q	1Q-4Q	2Q		
System Development & Demonstration					1Q-4Q	2Q		
Technology Development				1Q-4Q	1Q			

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EXHIBIT R-2a, RDT&E Project Justification				FY 2007 President's Budget (\$M)				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA-4			PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES				PROJECT NUMBER AND NAME 3131 Intratheater Connectors									
COST (\$ in Millions)			FY 2005		FY 2006		FY 2007		FY 2008		FY 2009		FY 2010		FY 2011	
Project Cost			0.000		4.775		0.000		0.000		0.000		0.000		0.000	
RDT&E Articles Qty																

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: (3131) Intratheater Connectors - develops future capabilities in support of intratheater connectors. These ship systems will be capable of self-deploying to the theater of operations, provide the air and surface means to move forces and supplies over operational distances within a theater. Intratheater connectors provide the JFC a mobility asset that enables rapid force closure to the seabase from advanced bases, movement of logistics, ship-to-ship and ship-to-shore replenishment, and in appropriate threat environments, the maneuver of forces to the shore.

The primary missions approved by the Services and defined in the Initial Capabilities Document (ICD) include the following:

- Global War on Terror (GWOT)/Theater Security Cooperation Program (TSCP)
- Intratheater Operational/Littoral Maneuver
- Force Closure/Seabasing Support

The Intratheater connector will have the following characteristics:

- * Moderate payload capacity (500 to 1,000 short tons)
- * Shallow draft
- * Self deploying and sustaining for short periods
- * Cross-theater laden ranges

FY07 through FY11 requirements realigned to new PE 0208058N, Project 3131

R-1 SHOPPING LIST - Item No.49

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 PRESIDENT'S BUDGET SUBMISSION			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES			PROJECT NUMBER AND NAME 3131 Intratheater Connectors		
B. Accomplishments/Planned Program						
		FY 05	FY 06	FY 07		
Accomplishments/Effort/Subtotal Cost		0.000	4.775	0.000		
RDT&E Articles Quantity						
R&D Efforts for Intratheater Connector - commercial technology integration analysis, risk mitigation, analysis of alternatives, concept refinement, and development of analysis of performance specification.						

R-1 SHOPPING LIST - Item No.49

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 President's Budget (\$M)	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	PROJECT NUMBER AND NAME 3131 Intratheater Connectors	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
President's Budget 2006	0.000	4.848	11.850
President's Budget 2007	<u>0.000</u>	<u>4.775</u>	<u>0.000</u>
Total Adjustments	0.000	-0.073	-11.850
Summary of Adjustments			
Technical Adjustment	0.000	0.000	-11.850
Sec 8125 Revised Economic Assumptions	0.000	-0.022	0.000
1% Congressional Reduction	<u>0.000</u>	<u>-0.051</u>	<u>0.000</u>
Total Adjustment	0.000	-0.073	-11.850
Schedule:			
Not Applicable			
Technical:			
Not Applicable			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification								FY 2007 President's Budget (\$M)		DATE:
										February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME						PROJECT NUMBER AND NAME			
RD TEN/BA-4	PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES						3131 Intratheater Connectors			
D. Other Program Funding Summary	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	To Complete	Total Cost	
PE 0204228N SCN/BLI3043 Intratheater Connector Surface Support					197.680	174.151	181.788	TBD	553.619	
(U) Related RDT&E:										
PE 0604567N (U)SHIP CONTRACT DESIGN/LIVE FIRE T&E/3134 Intratheater Connectors	0.000	1.941	0.000	0.000	0.000	0.000	0.000	0.000	1.941	
PE 0208058N (U)JOINT HIGH SPEED VESSEL (JHSV)										
3131 Intratheater Connectors (Concept Studies)			11.906	5.046	3.923	1.751	2.448	TBD	25.074	
3134 Intratheater Connectors (Contract Design)			2.257	13.893	7.974	6.854	1.359	TBD	32.337	
E. Acquisition Strategy:										
Feasibility studies will be conducted to determine the best designs to meet new Joint Service requirements for intratheater connectors.										
F. Major Performers:										
Field Activities & Locations - Work Performed										
NSWC, Carderock, MD - Concept development and engineering support										
SPAWAR Systems Center, Charleston SC - Concept development and engineering support										
NAVAIR Pax River, MD - Concept development and engineering support										
Contractors & Locations - Work Performed										
CSC, Washington, DC - Engineering Support										
ALION-JJMA, Washington, DC - Program Support										
Universities & Locations - Work Performed										

R-1 SHOPPING LIST - Item No.49

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RD TEN/BA-4			PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					3131 Intratheater Connectors						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Ancillary Hardware Development													0.000	
Modeling & Simulation	Various	Various						1.175	2Q	0.000			1.175	
Risk Mitigation Efforts	MAC	ALION-JJMA						0.175	2Q	0.000			0.175	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.000	0.000		0.000		1.350		0.000		0.000	1.350	
Development Support										0.000			0.000	
Software Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
Studies & Analyses	Various	Various						1.020	2Q	0.000			1.020	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.000		0.000		1.020		0.000		0.000	1.020	
Remarks:														

R-1 SHOPPING LIST - Item No.49

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4			PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					PROJECT NUMBER AND NAME 3131 Intratheater Connectors						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													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	0.000	
Remarks:														
Contractor Engineering Support	MAC	CSC						0.350	2Q	0.000			0.350	
Government Engineering Support	WX	Various						0.290	2Q				0.290	
Program management Support	MAC	ALION-JJMA						1.415	2Q				1.415	
Travel	PD	NAVSEA						0.350					0.350	
Transportation													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		2.405		0.000		0.000	2.405	
Remarks:														
Total Cost			0.000	0.000		0.000		4.775		0.000		0.000	4.775	
Remarks:														

R-1 SHOPPING LIST - Item No.49

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																									DATE: February 2006							
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RD TEN/BA-4										PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES										3131 Intratheater Connectors (Concept Studies)												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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 A								△ MS B														
Preliminary Design & Feasibility Studies					△ CD					△	CDD	△																				
						△				△																						

R-1 SHOPPING LIST - Item No.49

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4		PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY			PROJECT NUMBER AND NAME 3131 Intratheater Connectors				
Schedule Profile			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
AoA Completion				1Q					
Milestone A				3Q					

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				FY 2007 President's Budget (\$M)			DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RD TEN/BA-4		PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES			3132 Intertheater Connectors				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			0.000	7.642	7.376	0.000	0.000	0.000	0.000
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: (3132) Intertheater Connectors - conduct feasibility studies and preliminary design studies for a high speed sealift ship to deliver strike aircraft to the seabase. The ship will provide an improved MEB force closure for the seabase by deploying troops, non-self deploying aircraft and other high demand/low density (HD/LD) items via rapid surface strategic lift directly to the seabase. Analysis developed during Joint Staff sponsored Advanced Mobility Concept Study also indicates that rapid surface lift can close larger forces faster than airlift in certain circumstances. Consequently, the Intertheater Connector is envisioned to be a strategic sealift vessel capable of supporting closure of Marine Expeditionary Brigade, Army SBCT, Navy, Air Force or SOF units. Employment could support entire conflict spectrum.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification	FY 2007 President's Budget (\$M)	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	PROJECT NUMBER AND NAME 3132 Intertheater Connectors

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	4.947	3.095
RDT&E Articles Quantity			

R&D Efforts for Intertheater Connector - Develop and Validate tools in critical technology areas to allow Navy to Warrant /Certify possible designs of high speed intertheater connectors ; Resistance and Powering, Hull/Propulsor Interaction ,Seakeeping and Structural Loads.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			
RDT&E Articles Quantity		2.695	4.281

Engineering and Acquisition Support: Engineering and program management including requirements development, acquisition documentation development in support of acquisition milestones. Concept studies in support of Concept Decision and AOA.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 President's Budget (\$M)	DATE: February 2006																																																												
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES	PROJECT NUMBER AND NAME 3132 Intertheater Connectors																																																													
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: right;">FY 2005</th> <th style="width: 10%; text-align: right;">FY 2006</th> <th style="width: 10%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>President's Budget 2006</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">7.758</td> <td style="text-align: right;">7.524</td> </tr> <tr> <td>President's Budget 2007</td> <td style="text-align: right;"><u>0.000</u></td> <td style="text-align: right;"><u>7.642</u></td> <td style="text-align: right;"><u>7.376</u></td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.116</td> <td style="text-align: right;">-0.148</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>Programmatic changes</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.192</td> </tr> <tr> <td>Revised rates & inflation indices</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.044</td> </tr> <tr> <td>Sec 8125 Revised Economic Assumptions</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.035</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Congressional 1% reduction</td> <td style="text-align: right;"><u>0.000</u></td> <td style="text-align: right;"><u>-0.081</u></td> <td style="text-align: right;"><u>0.000</u></td> </tr> <tr> <td>Total Adjustment</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.116</td> <td style="text-align: right;">-0.148</td> </tr> <tr> <td colspan="4" style="padding-top: 20px;">Schedule:</td> </tr> <tr> <td style="padding-left: 20px;">Not Applicable</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Technical:</td> </tr> <tr> <td style="padding-left: 20px;">Not Applicable</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					FY 2005	FY 2006	FY 2007	Funding:				President's Budget 2006	0.000	7.758	7.524	President's Budget 2007	<u>0.000</u>	<u>7.642</u>	<u>7.376</u>	Total Adjustments	0.000	-0.116	-0.148	Summary of Adjustments				Programmatic changes	0.000	0.000	-0.192	Revised rates & inflation indices	0.000	0.000	0.044	Sec 8125 Revised Economic Assumptions	0.000	-0.035	0.000	Congressional 1% reduction	<u>0.000</u>	<u>-0.081</u>	<u>0.000</u>	Total Adjustment	0.000	-0.116	-0.148	Schedule:				Not Applicable				Technical:				Not Applicable			
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R-1 SHOPPING LIST - Item No.49

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		FY 2007 President's Budget (\$M)						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4		PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES				PROJECT NUMBER AND NAME 3132 Intertheater Connectors			
D. Other Program Funding Summary	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	To Complete	Total Cost
<p>(U) Related RDT&E: Not Applicable</p> <p>E. Acquisition Strategy:</p> <p>Concept studies will be conducted to determine how to best meet new Navy requirements for the intertheater connector.</p> <p>F. Major Performers:</p> <p>Field Activities & Locations - Work Performed NSWC, Carderock, MD - Concept development and engineering support NSWC, Panama City, FL - Concept development NFESC Pt Hueneme CA - Concept development SPAWAR Systems Center, Charleston SC - Concept development and engineering support NAVAIR Pax River, MD - Concept development and engineering support Office of Naval Research, Arlington, VA - Concept Development</p> <p>Contractors & Locations - Work Performed CSC, Washington, DC - Engineering Support</p> <p>Universities & Locations - Work Performed</p>									

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CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RD TEN/BA-4			PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					3132 Intertheater Connectors						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Hullform Development	WX	NSWC						1.915	1Q	1.360	1Q	0.000	3.275	
Propulsor Development	WX	NSWC						0.955	1Q	0.490	1Q	0.000	1.445	
Hull/Propulsor Integration	WX	NSWC						1.803	1Q	0.970	1Q	0.000	2.773	
Light Weight Auxiliary Systems	WX	NSWC						0.000	1Q	0.000		0.000	0.000	
Industry Risk Reduction	WX	NSWC						0.275	1Q	0.275	1Q	0.000	0.550	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.000	0.000		0.000		4.947		3.095		0.000	8.042	
Remarks:														
Development Support													0.000	
Software Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
Studies & Analyses													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4			PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES					PROJECT NUMBER AND NAME 3132 Intertheater Connectors						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													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	0.000	
Remarks:														
Contractor Engineering Support	MAC	CSC						1.174	1Q	1.700	1Q	0.000	2.874	
Government Engineering Support	MAC	CSC						0.849	1Q	1.141	1Q	0.000	1.990	
Program management Support	WX	NSWC						0.662	1Q	1.430	1Q		2.092	
Travel	MAC	CSC						0.010	1Q	0.010	1Q		0.020	
Transportation	PD	NAVSEA											0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		2.695		4.281		0.000	6.976	
Remarks:														
Total Cost			0.000	0.000		0.000		7.642		7.376		0.000	15.018	
Remarks:														

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UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																					DATE: February 2006											
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4					PROGRAM ELEMENT NUMBER AND NAME PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES																PROJECT NUMBER AND NAME 3132 Intertheater Connectors											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
	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																																
ICD Approval								▲																								
Concept Decision								▲																								
AoA Completion											▲																					
AoA Briefing												▲																				

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UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA-4	PROGRAM ELEMENT PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY ST				PROJECT NUMBER AND NAME 3132 Intertheater Connectors			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ICD Approval			4Q					
Concept Decision				1Q				
AoA Completion				3Q				
AoA Breifing				4Q				

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UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	3.306	5.100	0.000	0.000	0.000	0.000	0.000
9043/Material Advanced Metallic Material Adv Dev	3.306	0.000	0.000	0.000	0.000	0.000	0.000
9999/Congressional Adds	0.000	5.100	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

- (U) Project 9043 - Congressional Add. This project funds the Metallic Material Advanced Development and Certification Program.
- (U) Project 9999 - See the R2a for descriptions.

R-1 SHOPPING LIST - Item No. 51

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603573N/ADVANCED SURFACE MACHINERY SYS	PROJECT NUMBER AND NAME 9043 ADVANCED SURFACE MACHINERY PROGRAMS
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	2.180			
RDT&E Articles Quantity				

The objective of this task is to establish and maintain a Navy material property database (NMATDB) for metals applicable to ship and submarine construction and repair. Funds were sent to Concurrent Technologies Corporation.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.126			
RDT&E Articles Quantity				

The objective of this task is to establish and maintain a Navy material property database (NMATDB) for metals applicable to ship and submarine construction and repair. Funds were sent to NSWC Carderock.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603573N/ADVANCED SURFACE MACHINERY SYSTEMS	PROJECT NUMBER AND NAME 9043/ADVANCED SURFACE MACHINERY PROGRAMS																																
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">Funding:</th> <th style="text-align: right; padding: 5px;">FY 2005</th> <th style="text-align: right; padding: 5px;">FY 2006</th> <th style="text-align: right; padding: 5px;">FY 2007</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">FY 2006 President's Budget</td> <td style="text-align: right; padding: 5px;">3.367</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> <tr> <td style="padding: 5px;">FY 2007 President's Budget</td> <td style="text-align: right; padding: 5px;">3.306</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> <tr> <td style="padding: 5px;">Total Adjustments</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.061</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> </tr> <tr> <td colspan="4" style="padding: 5px;">Summary of Adjustments</td> </tr> <tr> <td style="padding: 5px; padding-left: 20px;">Small Business Innovation Reserve</td> <td style="text-align: right; padding: 5px;">-0.059</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> <tr> <td style="padding: 5px; padding-left: 20px;">Other Adjustments</td> <td style="text-align: right; padding: 5px;">-0.002</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> <tr> <td style="padding: 5px; padding-left: 20px;">Subtotal</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">-0.061</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> <td style="text-align: right; padding: 5px; border-top: 1px solid black;">0.000</td> </tr> </tbody> </table> <p style="padding: 10px 0 0 20px;">Schedule: Not Applicable</p> <p style="padding: 10px 0 0 20px;">Technical: Not Applicable</p>			Funding:	FY 2005	FY 2006	FY 2007	FY 2006 President's Budget	3.367	0.000	0.000	FY 2007 President's Budget	3.306	0.000	0.000	Total Adjustments	-0.061	0.000	0.000	Summary of Adjustments				Small Business Innovation Reserve	-0.059	0.000	0.000	Other Adjustments	-0.002	0.000	0.000	Subtotal	-0.061	0.000	0.000
Funding:	FY 2005	FY 2006	FY 2007																															
FY 2006 President's Budget	3.367	0.000	0.000																															
FY 2007 President's Budget	3.306	0.000	0.000																															
Total Adjustments	-0.061	0.000	0.000																															
Summary of Adjustments																																		
Small Business Innovation Reserve	-0.059	0.000	0.000																															
Other Adjustments	-0.002	0.000	0.000																															
Subtotal	-0.061	0.000	0.000																															

R-1 SHOPPING LIST - Item No. 51

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603573N/ADVANCED SURFACE MACHINERY SYS			PROJECT NUMBER AND NAME 9043/ADVANCED SURFACE MACHINERY PROGRAMS				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
None									
E. ACQUISITION STRATEGY:									
F. MAJOR PERFORMERS:									

R-1 SHOPPING LIST - Item No. 51

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603573N/Advanced Surface Machinery Systems	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS
---	--	---

CONGRESSIONAL PLUS-UPS:

	FY 06		
9043C			
Advanced Combatant Materials Research	3.4		

Due to changing operational requirements, ships will require improved stealth, speed, and payload flexibility, which can place additional burdens on ship weight. The Advanced Combatant Materials funding will investigate high strength, damage tolerant, lightweight materials and associated advanced fabrication technologies that can achieve significant weight reduction or improved performance. These include improved marine aluminum alloys, solid state welding processes, novel titanium alloy processing, advanced steels for improved blast and ballistic protection, and a breakthrough in composite - metal joining invented in the UK.

	FY 06		
9819N			
LCS Advanced Lightweight Materials Technology	1.7		

To meet mission requirements in the littoral environment, the LCS will require superior speed, maneuverability, and payload modularity that will be achieved through the use of lightweight aluminum and titanium alloys. The LCS Advanced Lightweight Materials Technology will investigate structural design concepts and manufacturing technologies that optimize ship properties, advanced welding processes such as friction stir welding and pulsed gas metal arc welding for higher productivity, and methods to modify the local and/or surface properties for improved fatigue performance.

R-1 SHOPPING LIST - Item No. 51

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603581N - Littoral Combat Ship (LCS)			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	450.783	573.957	319.671	187.568	132.776	144.064	63.173
3096 - LCS Development	228.034	85.955	57.067	60.327	43.153	43.937	22.359
3129 - Mission Package Project	0.000	206.757	162.339	90.439	82.536	100.127	40.814
4018 - Littoral Combat Ship Construction	222.749	275.045	100.265	36.802	7.087	0.000	0.000
9999 - Undistributed RDT&E & Congressional Add	0.000	6.200	0.000	0.000	0.000	0.000	0.000
Defense Emergency Response Funds (DERF) Funds: N/A							
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
<p>This Program Element (PE) provides funds for development integration and testing of the Littoral Combat Ship (LCS). Also included in the PE is detail design and construction for two ships of Flight 0, and procurement of mission packages for these Flight 0 ships. The LCS is to be a fast, agile, and stealthy surface combatant capable of operating in support of anti-access missions against asymmetric threats in the littorals. Primary access-focused missions include prosecution of small boats, mine counter-measures, littoral anti-submarine warfare (ASW). Inherent capabilities include: intelligence, surveillance and reconnaissance, homeland defense, Special Operating Forces (SOF) support and logistic support for movement of personnel and supplies, maritime interdiction / interception operations (MIO), anti-terrorism / force protection (AT/FP), air self defense, and joint littoral mobility.</p> <p>Issue 9999 - Congressional Adds: \$6.2M for ASW multistatic sensor mission planning upgrade, remote operation of active sonar technology and unmanned surface vehicle concepts and technology.</p>							

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 1 of 30)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: Feb 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)			PROJECT NUMBER AND NAME 3096 - Littoral Combat Ship Development			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	228.034	85.955	57.067	60.327	43.153	43.937	22.359	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The LCS is to be a fast, agile, and stealthy surface combatant capable of operating in support of anti-access missions against asymmetric threats in the littorals. Primary access-focused missions include: prosecution of small boats, mine counter-measures, littoral anti-submarine warfare (ASW). Inherent capabilities include intelligence, surveillance and reconnaissance, homeland defense, SOF support and logistic support for movement of personnel and supplies. This project provides funds for the total ship system engineering, integration, program execution, platform development, and mission systems development. Mission systems development includes architectures, interfaces and development of mission systems. Mission systems development also includes the procurement of the mission packages to be used on the Flight 0 ships. Platform development includes platform experimentation and platform and ship system design and integration.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
LCS Program	16.487	30.098	15.985	
RDT&E Articles Quantity				

LCS Program Analysis, Engineering, Integration, & Management

Continue cost and risk analysis. Continue the development of operational context in which LCS will operate. This includes development and update of Concept of Operations (CONOPS), Initial Capabilities Document (ICD), Capabilities Development Document (CDD) and the Capabilities Performance Document (CPD). Held Flight 0 OIPT in October 2005. Begin documentation for Milestone B. Continue requirements and effectiveness analysis for Flight 0. Completed: IRD and ICD updated/developed and Navy approved in support of Final Design request for proposal, CONOPS finalized with Fleet approval, Flight 0 CDD developed and JROC approved for Milestone A and Program Initiation, and began risk management planning and implementation.

FY05 - Continued development and update of Concept of Operations (CONOPS), Begin work on acquisition documentation, prepared for and held Flight 0 OIPT in October 2005.
 FY05-06 - Continue the development of operational context in which LCS will operate. Begin documentation for Milestone B. Continue requirements and effectiveness analysis for LCS
 FY05-07 - Continue cost and risk analysis. Continue risk management planning and implementation.

	FY 05	FY 06	FY 07	
LCS System-of-Systems Development, Engineering & Experimentation	33.000	43.757	28.082	
RDT&E Articles Quantity				

LCS System-of-Systems Development, Engineering & Experimentation

Continue Systems Engineering, Integration Testing to include; System Architecture/ Interface Development, Ship Systems Engineering/Integration/Test, Core Systems Engineering/Integration/Test, Network Systems Engineering/Integration/Test, Human Systems Integration/Engineering/Test, Logistics & Training Development, and Shipbuilding Materials and Construction Technique Development.

LCS Technical Team participates, provides oversight and monitors industry preliminary system design, and final design for Flight 0. Completed: Ship Design management and technical review of Industry Preliminary design. Awarded Final Design contracts within the limited time provided in order to maintain accelerated acquisition timeline.

FY 05 - The LCS Technical Team continued to provide oversight and monitoring of Flight 0 final design. Awarded detail design and construction contract for LCS.

FY 06 - Continue support of Design for Flight 0.

FY 07 Continue participation in future flight design.

The systems development team consists of Laboratories, Government Warfare Centers, Universities and selected technical support contractors. The team provides the engineering expertise to evaluate/support industry designs and technology demonstrations of new system concepts and mission systems in order to reduce risk on components and subsystems.

EXHIBIT R-2a, RDT&E Project Justification		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
LCS Seaframe Development & Design	83.000	0.000	0.000	
RDT&E Articles Quantity				

LCS Seaframe Development & Design

Completed: Preliminary Design for Flight 0. Awarded two contracts for Flight 0 Final System Design with an option for Detail Design and Construction.
FY 05- Continued Final System Design for Flight 0

	FY 05	FY 06	FY 07	
LCS Test & Evaluation	6.000	12.100	13.000	
RDT&E Articles Quantity				

LCS Test & Evaluation

Continue LCS Test and Evaluation management to include TEMP, LFT&E management plan. Begin planning for Flight 0 test events.
Completed: Test & Evaluation (T&E) strategy. Developed updated T&E strategy and draft Test & Evaluation Master Plan (TEMP) to reflect contract award. Began planning for developmental testing (DT) and early operational assessment (EOA)
FY05 - Began EOA for Flight 0 Ship 1. Continued Engineering Testing /Development Testing (ET/DT).
FY06 - Begin DT assistance. Begin component and system shock testing. Continue modeling and simulation (M&S) and surrogate testing.
FY07 - Begin LCS ordnance T&E

	FY 05	FY 06	FY 07	
LCS Mission Module Development & Procurement	89.547	0.000	0.000	
RDT&E Articles Quantity				

Mission Module Development & Procurement is funded in core Project 3129 FY06 and follow.

Mission capabilities in littoral mine warfare, small boat neutralization and littoral anti-submarine warfare to enable the US Joint Force to operate in the littoral. Mission systems development includes architectures, interfaces and development of mission systems. Mission systems development also includes the procurement of the mission packages to be used on the Flight 0 ships.

Mine Warfare Mission Package (MIW) will provide the Joint force commander with the capability to conduct organic mine countermeasure (MCM) operations ranging from first response mine detection and avoidance, to neutralization and sweeping for littoral conditions that preclude hunting, enabling Joint operations to be conducted ahead of power projection forces with reduced need for escorts. This will open transit lanes and operating areas for naval forces. MCM operations will reduce the timeline for access to the contested littoral thereby providing options to the joint force commander. Additionally, LCS should have the capability to deploy distributed sensors that will enhance detection, classification, identification and targeting of enemy mines.

Littoral Anti-Submarine Warfare Mission Package (ASW) will provide ASW capabilities while operating in a contested littoral environment. Leveraging multiple distributed sensors netted together, LCS will exploit real time undersea data, using maneuver and deception to enhance detection, classification, identification, targeting and destruction of enemy submarines.

Littoral Surface Warfare Mission Package (SUW) will provide the capability to detect, track and engage small boat threats, giving the joint force commander the ability to maximize striking power or successfully move through a restricted area.

FY 05 - Continued technology development and demonstration activities. Continued mission system zone and module development and integration, to include the following; MIW, ASW and SUW Mission Module Development, Procurement, Integration, & Testing (funds Navy participation in Joint Advanced Concept Technology Demonstration (ACTD) (SPARTAN mission module package). Flight 0 Mission systems for each mission area identified, funding itemized, development and procurement plan in execution.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship	PROJECT NUMBER AND NAME 3096 - LCS Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY2006 President's Budget	224.156	117.310	130.834
FY2007 President's Budget	228.034	85.955	57.067
Total Adjustments	3.878	-31.355	-73.767

(U) Summary of Adjustments			
Other general provisions	-5.335	-0.442	-0.485
Programmatic Changes	9.213	-30.000	-73.071
Rescissions		-0.913	
Inflation			0.257
Warfare Center Rates			-0.468
Total	3.878	-31.355	-73.767

Schedule:

See Individual Projects

Technical:

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: Feb 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N- Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3096 - LCS Development
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
BLI 160000 (OPN)	0.000	40.124	79.059	207.618	652.316	656.246	720.173	CONT	CONT
BLI 212700 (SCN)	0.000	440.000	520.670	947.644	1764.290	1774.231	1825.445	CONT	CONT
BLI 422100 (WPN)	0.000	0.000	0.000	12.451	39.117	91.022	134.212	CONT	CONT
BLI 4223 (APN)	0.000	0.000	37.570	64.501	104.866	100.383	94.133	CONT	CONT

E. ACQUISITION STRATEGY:

(U) The LCS acquisition strategy encompasses multiple phases: Phases I and II are Concept Refinement and Technology Development, consisting of Preliminary Design, Final Design and Detail Design and Construction for Flight 0 ships.

F. MAJOR PERFORMERS:

General Dynamics - Bath Iron Works
Lockheed Martin

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Exhibit R-3 Cost Analysis (page 1)										DATE: Feb 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3096 - LCS Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Preliminary Design (Flight 0)	Compet	LM, BIW, RAYTHEON	30.686									CONT	CONT	
Final Design (Flight 0)	Compet	LM, BIW	50.479	83.000	1QFY05							CONT	CONT	
Mission Sys Dev	Various	Various	45.985	89.547	Various							CONT	CONT	
													CONT	
													CONT	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			127.150	172.547		0.000		0.000				CONT	CONT	
Remarks:														
														0.000
														0.000
														0.000
														0.000
														0.000
														0.000
														0.000
Subtotal Support			0.000	0.000		0.000		0.000				0.000	0.000	
Remarks:														

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CLASSIFICATION:

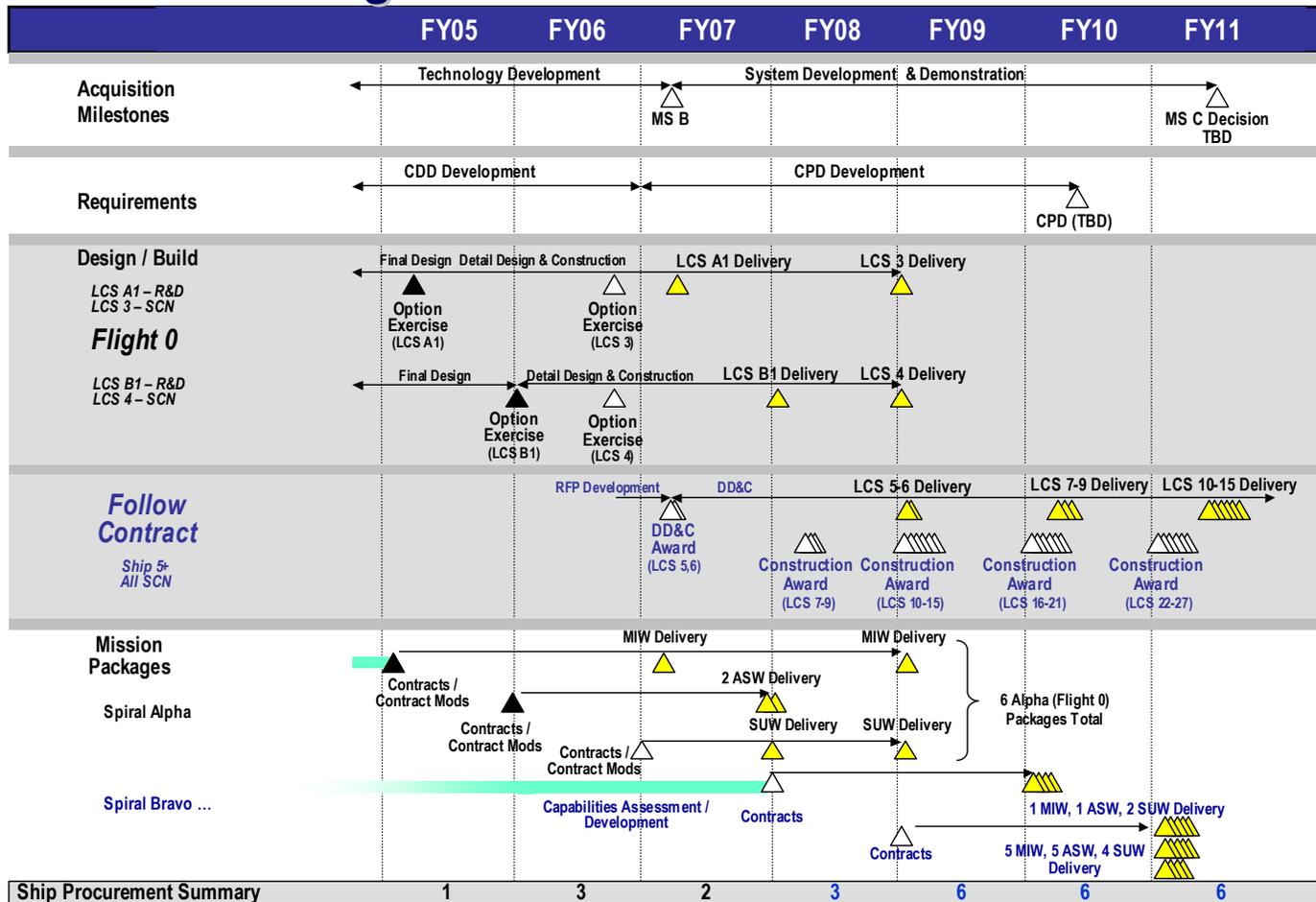
Exhibit R-3 Cost Analysis (page 2)										DATE: Feb-06				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3096 - LCS Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC/CD Bethesda, MD	3.000	1.500	1QFY05	4.000	1QFY06	4.500	1QFY07			CONT	CONT	
Developmental Test & Evaluation	WX	NSWC/DD, Dahlgren, VA	2.000	1.500	1QFY05	4.000	1QFY06	4.500	1QFY07			CONT	CONT	
Developmental Test & Evaluation	Various	Various	3.000	3.000	1QFY05	4.100	1QFY06	4.000	1QFY07			CONT	CONT	
Subtotal T&E			8.000	6.000		12.100		13.000				0.000	CONT	
Remarks:														
Contractor Engineering Support	Seaport	ANTEON, Arlington, VA	6.648	3.500	1QFY05	9.200	1QFY06					CONT	CONT	
	Seaport	Various	5.957	6.000	1QFY05	4.000	1QFY06					CONT	CONT	
	Comp					0.000	N/A	9.800	1QFY07					
Government Engineering Support	WX	NSWC/CD, Bethesda, MD	8.745	8.026	1QFY05	16.655	1QFY06	6.500	1QFY07			CONT	CONT	
	WX	NSWC/DD, Dahlgren, VA	11.843	8.000	1QFY05	6.000	1QFY06	6.000	1QFY07			CONT	CONT	
	WX	NSWC/PC, Panama City, FL	6.859	5.500	1QFY05	9.500	1QFY06	3.267	1QFY07			CONT	CONT	
	WX	NSWC/PHD, Port Hueneme,	0.000	2.050	1QFY05	3.500	1QFY06	1.000						
	Various	Government Activities	3.162	3.950	1QFY05	5.000	1QFY06	5.000	1QFY07			CONT	CONT	
	WX	NUWC, Newport, RI	2.858	3.369	1QFY05	2.000	1QFY06	2.500	1QFY07			CONT	CONT	
	WX	SPAWAR, San Diego, CA	3.325	4.000	1QFY05	4.000	1QFY06	3.000	1QFY076			CONT	CONT	
	WX	NSWC Div Crane	0.625			0.500	1QFY06							
	WX	NAWC AD, Pax River	2.800			5.000	1QFY06	2.000	1QFY07					
Program Management Support	Various	Various	4.765	4.580	1QFY05	6.000	1QFY06	4.000	1QFY07			CONT	CONT	
Labor (Research Personnel)	CPFF	APL/JHU Laurel MD	0.820	0.312	1QFY05	2.000	1QFY06	0.500	1QFY07			CONT	CONT	
Travel	Various	NAVSEA	0.081	0.200	1QFY05	0.500	1QFY06	0.500	1QFY07					
Subtotal Management			58.488	49.487		73.855		44.067				CONT	CONT	
Remarks:														
Total Cost			193.638	228.034		85.955		57.067		0.000		0.000	CONT	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3096 - LCS Development

LCS Program Schedule – Mission Package View

PB 07



R-1 SHOPPING LIST - Item No. 53

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)			PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	0.000	0.000	206.757	162.339	90.439	82.536	100.127	40.814
RDT&E Articles Qty			3	1				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Mission capabilities in littoral mine warfare, small boat neutralization and littoral anti-submarine warfare to enable the US Joint Force to operate in the littoral. Mission systems development includes architectures, interfaces and development of mission systems. Mission systems development also includes the procurement of the mission packages to be used on the Flight 0 ships.

Mine Warfare Mission Package (MIW) will provide the Joint force commander with the capability to conduct organic mine countermeasure (MCM) operations ranging from first response mine detection and avoidance, to neutralization and sweeping for littoral conditions that preclude hunting, enabling Joint operations to be conducted ahead of power projection forces with reduced need for escorts. This will open transit lanes and operating areas for naval forces. MCM operations will reduce the timeline for access to the contested littoral thereby providing options to the joint force commander. Additionally, LCS should have the capability to deploy distributed sensors that will enhance detection, classification, identification and targeting of enemy mines.

Littoral Anti-Submarine Warfare Mission Package (ASW) will provide ASW capabilities while operating in a contested littoral environment. Leveraging multiple distributed sensors netted together, LCS will exploit real time undersea data, using maneuver and deception to enhance detection, classification, identification, targeting and destruction of enemy submarines.

Littoral Surface Warfare Mission Package (SUW) will provide the capability to detect, track and engage small boat threats, giving the joint force commander the ability to maximize striking power or successfully move through a restricted area.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development

B. Accomplishments/Planned Program

MIW Mission Module Package	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	29.203	24.716
RDT&E Articles Quantity				

FY06: Integration of Cobra with Fire Scout VTUAV & LCS; Modifications to RMS (cradle design, capture spire, launch & recovery); Development of ILS training plans for MIW mission package on LCS. USV integration, Mission Module design, test, and fabrication; Integration with LCS and certification, modeling and simulation in support of module design; Technical manual and other related ILS documentation development.

FY07: Continuation of mission module test, integration & certification; Mission module fabrication for Mission Package #2; HSI; ILS documentation development and updates; Mission Package training; Modeling & Simulation; Training, certification; RMS installation, integration, testing, and training on LCS.

ASW Mission Module Package	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	97.112	43.244
RDT&E Articles Quantity			2	

FY06: Continuation of the development, integration, and testing of USV bi-static mission module includes UTAS and MSOBS mission systems; Continuation of the development, integration, and testing of the RTA & RTAS mission systems; Continuation of the integration of the dipping sonar onto the USV; USV w/dipper testing; Mission module cradle development and cradle integration with the mission modules; Procure 2 ASW MPs (\$56.400).

FY07: Continuation of the development, integration, and testing of USV bi-static mission module includes UTAS and MSOBS mission systems; Continuation of the development, integration, and testing of the RTA & RTAS mission systems; Continuation of the integration of the dipping sonar onto the USV; USV w/dipper testing; At Sea Array tow characteristics test.

SUW Mission Modules Package	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000		48.406	47.806
RDT&E Articles Quantity			1	1

FY06: Perform design, develop, test, evaluation, integration, certification with NLOS-LS, 30 MM gun module systems; Conduct the development & design of the SUW C2 system; Coordinate with the MH-60 and VTUAV systems to support SUW; MPI effort; Procure 1 NLOS-LS (Netfires) system and 1 Med Cal Gun module (\$9.000).

FY07: Conduct certification efforts; Final safety approach; Develop training/maintenance manuals; Provide prototype HW/SW to support certification efforts; Procures one (1) SUW package (\$9.180); Procure NLOS (Netfires) Missiles for testing (\$11.724).

R-1 SHOPPING LIST - Item No. 53

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 12 of 30)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development
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B. Accomplishments/Planned Program

Common Mission Module Development	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	32.036	46.573
RDT&E Articles Quantity				

FY06: begin ACP integration into VTUAV; Complete C2 build 1 MIW integration; Acquire MPCE 1 & 2 and ILS plan; Flight 1 interface Mod Dev/Integration; Funds transition of Joint Advanced Concept Technology Demonstration program (SPARTAN); MPI efforts (MIW, ASW, SUW, C2).

FY07: Installation of the MPCE build 1 to ship; Completion of C2 build 1.1 for MIW; Fire Scout integration and Rehosting Fire Scout TCS S/W in LCS; ACP development for VTUAV; continuing MPI efforts (MIW, ASW, SUW, C2).

Accomplishments/Effort/Subtotal Cost	FY 04	FY 05	FY 06	FY 07
	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

Accomplishments/Effort/Subtotal Cost	FY 04	FY 05	FY 06	FY 07
RDT&E Articles Quantity				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship	PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY2006 President's Budget	0.000	209.908	131.578
FY2007 President's Budget	0.000	206.757	162.339
Total Adjustments	0.000	-3.151	30.761

(U) Summary of Adjustments

Other General Provisions	-0.956	-0.334
Warfare Center Rates		-0.936
Inflation		0.723
Rescissions	-2.195	
Programmatic Changes		31.308
Total	0.000	-3.151

Schedule:

See R-4 for breakout.

Technical:

TBD

R-1 SHOPPING LIST - 53

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 14 of 30)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N- Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
BLI 160000 (OPN)	0.000	40.124	79.059	207.618	652.316	656.246	720.173	CONT	CONT
BLI 212700 (SCN)	0.000	440.000	520.670	947.644	1764.290	1774.231	1825.445	CONT	CONT
BLI 422100 (WPN)	0.000	0.000	0.000	12.451	39.117	91.022	134.212	CONT	CONT
BLI 4223 (APN)	0.000	0.000	37.570	64.501	104.866	100.383	94.133	CONT	CONT

E. ACQUISITION STRATEGY:

((U) The LCS acquisition strategy encompasses multiple phases: Phases I and II are Concept Refinement and Technology Development, consisting of Preliminary Design, Final Design and Detail Design and Construction for Flight 0 ships. A parallel three phase approach is planned for Flight 0+ ships. - Preliminary System Design, - Final System Design and - Detail Design and Construction.

F. MAJOR PERFORMERS:

N/A

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3129 - LCS Mission Package Development - MIW						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MIW Mission Module Development and integration	WX	Various				24.203	10/05	17.716	10/06	Continuing	Continuing	
Modularization	Various	Various				5.000	10/05	5.000	10/06	Continuing	Continuing	
Equipment and Hardware												
Subtotal Product Development						29.203		22.716		Continuing	Continuing	
Remarks:												
T&E	WX	Various						2.000	10/06	Continuing	Continuing	
								0.000		2.000	Continuing	Continuing
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3129 - LCS Mission Package Development - ASW						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ASW Mission Module Development and integration	WX	Various				40.712	10/05	34.244	10/06	Continuing	Continuing	
Modularization	Various	Various				5.000	10/05	7.000	10/06	Continuing	Continuing	
Equipment and Hardware												
- ASW Module	C/FP	Unknown				14.000	12/05				14.000	N/A
- USV	C/FP	LHM, Syracuse				10.400	12/05				10.400	N/A
- Towed Array	C/FP	LHM, Syracuse				10.000	03/06				20.000	N/A
- Distrubuted Expendable System	C/FP	Unknown				17.000	12/05				17.000	N/A
Subtotal Product Development						97.112		41.244		Continuing	Continuing	
Remarks:												
T&E	WX	Various				0.000	10/05	2.000	10/06	Continuing	Continuing	
Subtotal Support						0.000		2.000				
Remarks:												

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3129 - LCS Mission Package Development - SUW						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUW Mission Module Development												
and integration	WX	Various				34.086	10/05	20.365	10/06	Continuing	Continuing	
Modularization	Various	Various				3.120	10/05	4.919	10/06	Continuing	Continuing	
Equipment and Hardware												
- NLOS-LS (NetFires)	FFP	Raytheon, AZ				3.500	12/05	3.570	12/06		#REF!	N/A
- Med Cal Gun Module	FFP	ATK, MD				5.500	12/05	5.610	12/06		#REF!	N/A
- NLOS (Netfires) Missiles for Shipfill &Te	FFP	Raytheon, AZ						10.442	12/06	9.959	#REF!	N/A
Subtotal Product Development						46.206		44.906		Continuing	Continuing	
Remarks:												
T&E	WX	Various				2.200	10/05	2.900	10/06	Continuing	Continuing	
Subtotal Product Development						2.200		2.900		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship			3129 - LCS Mission Package Development - Common						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Common Module Development and integration												
- FIRESCOUT (Integration & TSC S	Various	Various				2.000	10/05	6.257	10/06	Continuing	Continuing	
- MH60R	Various	Various				0.000	10/05	0.000	10/06	Continuing	Continuing	
- Airborne Comm Package	Various	Various				4.849	10/05	6.865	10/06	Continuing	Continuing	
- Common Vehicle	Various	Various				2.000	10/05	8.917	10/06	Continuing	Continuing	
- Common C2	Various	Various				16.000	10/05	13.097	10/06	Continuing	Continuing	
Modular Development	CPAF	Northrop Grumman-Bethpage, NY				5.000	01/06	9.653	10/06	Continuing	Continuing	
Subtotal Development & Integration						29.849		44.789		Continuing	Continuing	
Remarks:												
Program Management Support	Various	Various				2.132	10/05	1.730	10/06	Continuing	Continuing	
Travel		NAVSEA				0.055	10/05	0.054	10/06	Continuing	Continuing	
Subtotal Management						2.187		1.784		Continuing	Continuing	
Remarks:												
Mission Package Total Cost						206.757		162.339		Continuing	Continuing	
Remarks:												

EXHIBIT R-2a, RDT&E Project Justification							DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 4018 - Littoral Combat Ship Construction		
COST (\$ in Millions)	2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	222.749	275.045	100.265	36.802	7.087	0.000	0.000
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project funds the detail design and construction of two RDT&E LCS Flight 0 ships and associated Outfitting & Post Delivery.

Breakout of RDT&E ship end cost are shown below.

	<u>LCS A1</u>	<u>LCS B1</u>
Basic Construction (\$M)	\$252,000	\$256,000
Change Orders (\$M)	\$5,000	\$10,000
Other (ILS, Sys Eng., Test/Trials) (\$M)	\$5,000	\$5,000
Other GFE (\$M)	<u>\$12,476</u>	<u>\$7,139</u>
	\$274,476	\$278,139

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EXHIBIT R-2a, RDT&E Project Justification		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 4018 - Littoral Combat Ship Construction

B. Accomplishments/Planned Program

LCS Seaframe Construction	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	206.749	266.339	63.527	
RDT&E Articles Quantity				

FY05 - FY07 Detail design and construction funding for Lockheed Martin LCS A1.
 FY06 - FY07 Detail design and construction funding for General Dynamics LCS B1.
 FY05-06 Continue detailed production planning for LCS to include: development of purchase specifications/drawings for all the significant equipment, begin initial competition and selection of components, issue contracts and begin production of components. Begin logistics support analysis and develop crew training. Design fixtures and jigs to facilitate construction. Begin production design for early work packages to include work instructions, schedules, work locations, material list, tooling, facilities and manpower. requirements.

LCS Outfitting & Post Delivery	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost		8.706	36.738	
RDT&E Articles Quantity				

FY06 - LCS A1Outfitting funding is required for spare parts, medical and dental supplies, pre-commission crew support, and crew move aboard.
 FY07 - LCS A1/B1 Outfitting funding is required for spare parts, medical and dental supplies, pre-commission crew support, and crew move aboard. Post Delivery funding is required for Developmental Testing, Combat System Ship Qualification Test (CSSQT), test and trials, Mission Package interface testing, correction of deficiencies, and Live Fire Test & Evaluation (LFT&E).

LCS Seaframe Long Lead Material	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	16.000			
RDT&E Articles Quantity				

FY 05 - Funded procurement of long lead items in advance of contract award for LCS B1.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 4018 - Littoral Combat Ship Construction

C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
FY2006 President's Budget	228.455	249.236	36.738
FY2007 President's Budget	222.749	275.045	100.265
Total Adjustments	-5.706	25.809	63.527

(U) Summary of Adjustments

Other general provisions	-5.706	-1.271	-0.015
Rescissions		-2.920	
Warfare Center Rates			-0.001
Programmatic Changes		30.000	63.100
Inflation			0.443
Total Adjustments	-5.706	25.809	63.527

Schedule:

Not Applicable

Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: Feb 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 4018 - Littoral Combat Ship Construction
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D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
BLI 160000 (OPN)	0.000	40.124	79.059	207.618	652.316	656.246	720.173	CONT	CONT
BLI 212700 (SCN)	0.000	440.000	520.670	947.644	1764.290	1774.231	1825.445	CONT	CONT
BLI 422100 (WPN)	0.000	0.000	0.000	12.451	39.117	91.022	134.212	CONT	CONT
BLI 4223 (APN)	0.000	0.000	37.570	64.501	104.866	100.383	94.133	CONT	CONT

E. ACQUISITION STRATEGY:

(U) The LCS acquisition strategy encompasses multiple phases: Phases I and II are Concept Refinement and Technology Development, consisting of Preliminary Design, Final Design and Detail Design and Construction for Flight 0 ships.

F. MAJOR PERFORMERS:

General Dynamics - Bath Iron Works
Lockheed Martin

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Exhibit R-3 Cost Analysis (page 1)										DATE: Feb 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE 0603581N - Littoral Combat Ship (LCS)				4018 - Littoral Combat Ship Construction							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
LCS A1 Construction	Comp	Lockheed Martin	0.000	206.749	2QFY05	59.200		8.527				Continuing	Continuing	
Long Lead Material LCS B1	Comp	General Dynamics		16.000								Continuing	Continuing	
LCS B1 Construction	Comp	General Dynamics				207.139	1QFY06	55.000				Continuing	Continuing	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			0.000	222.749		266.339		63.527				0.000	552.615	
Initial Outfitting & Post Delivery	Various	TBD				8.706	4QFY06	36.738	2QFY07			Continuing	Continuing	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
			0.000	0.000		8.706		36.738				0.000	45.444	
Remarks:														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: Feb 2006				
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-4			PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship (LCS)				PROJECT NUMBER AND NAME 4018 - Littoral Combat Ship Construction							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Subtotal T&E														
Remarks:														
Government Engineering Support														
Government Engineering Support														
Program Management Support														
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management														
Remarks:														
Total Cost			0.000	222.749		275.045		100.265				Continuing	Continuing	
Remarks:														

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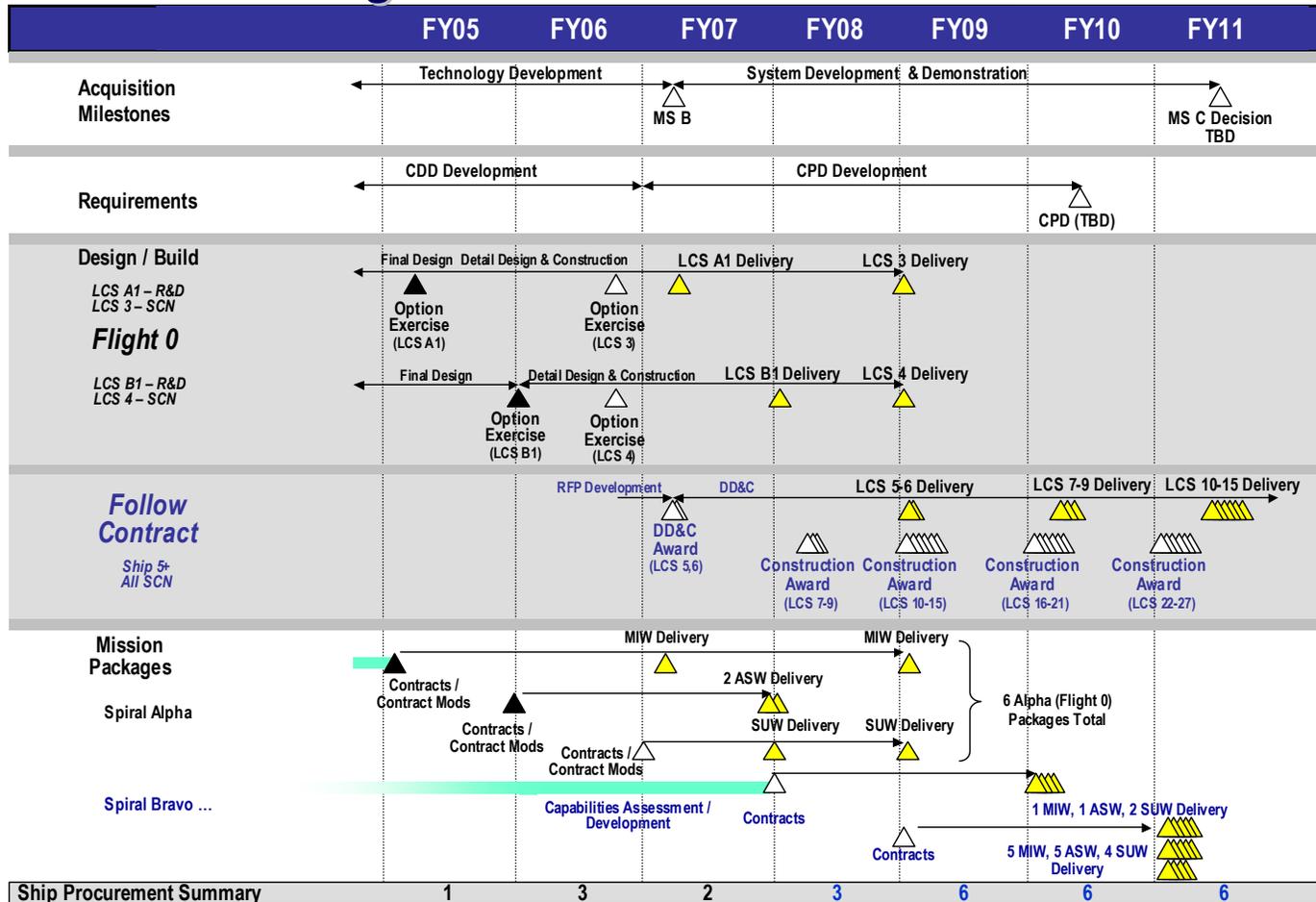
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CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: Feb 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 4018 - LCS Construction

LCS Program Schedule – Mission Package View

PB 07



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Exhibit R-2, RTEN Budget Item Justification
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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: Feb-06	
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA-4	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 4018 - LCS Development		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Final Design (Flight 0)	1Q-4Q						
Detail Design and Construction (Flight 0)	2Q-4Q	1Q-4Q	1Q-4Q	1Q			
Mission System Development & Platform Exp	1Q-4Q	1Q-4Q	1Q-4Q				
Construction - SCN Funded		4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Milestone B			2Q				
Milestone C							2Q
Ship A1 Delivery (Flight 0) - RDT&E Funded			2Q				
Ship B1 Delivery (Flight 0) - RDT&E Funded				1Q			
Ship 3 Delivery - SCN Funded				4Q			
Ship 4 Delivery - SCN Funded				4Q			
NOTE:							
Developmental Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q	
Operational Testing	2Q	2Q	2Q-4Q	2Q-4Q		2Q-4Q	
Engineering Events - TBD							

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Exhibit R-2, RD TEN Budget Item Justification
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship	PROJECT NUMBER AND NAME 9999-Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9820N				
ASW Multistatic Sensor Mission Planning Upgrade	1.0			

The LCS ASW Mission Package (MP) will include common capabilities for use with pre-deployment planning, in situ performance estimates and in situ replanning for all ASW Mission Modules. The LCS ASW MP shall support mission planning for Low Frequency Bi-static/multi-static Systems deployed from USVs. The LCS ASW MP common capabilities will be derived from legacy PORs that have been developed for the surface ship, surveillance and submarine programs.

	FY 06			
9821N				
Remote Operation of Active Sonar Technology	3.0			

The ASW MP shall optimize active Sonar operating depth and source transmission to achieve the best acoustic coverage for the mission area and target scenario, based on the available source transmission and receiver processing characteristics

	FY 06			
9822N				
Unmanned Surface Vehicle Concepts & Technology	2.2			

Initiate common USV program transition, concept development, and integration for LCS. This concept focuses on a critical need of the Navy as it seeks to develop and deploy rapidly reconfigurable, multi-mission unmanned surface vehicles (USVs) of modular design . This effort will provide:

- Systems engineering and modeling and simulation (M&S) tools to support USV system module development and budget decisions
- Assessment of operational performance versus cost, programmed capabilities, engineering concepts/designs
- Risk analyses of operational concepts, and combination of USV systems and Sensor technology.

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EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE						
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4		Combat Systems Integration/Strike Force Interoperability 0603582N						
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		\$100.974	\$92.310	\$62.095	\$52.173	\$50.846	\$30.244	\$29.768
0164/Combat Systems Integ/Strike Force Interoperability		\$74.649	\$75.810	\$62.095	\$52.173	\$50.846	\$30.244	\$29.768
0164/Maritime Directed Energy Test Center (MDTEC)		\$2.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9356/Advanced Laser Diode Array (ALDA)		\$1.479	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9357/Laser Induced Plasma Channeling (LIPC)		\$12.206	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9527/Application of Novel Laser Systems on Optical Seekers		\$0.971	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9529/Context Adaptable Autonomous & Remote Unmanned System Operation (CARUSO)		\$2.469	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9530/High Energy Laser Application Effects		\$1.645	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9531/Laser Augmented Ship Self Defense (LASSD)		\$1.652	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9532/Unexploded Ordnance Detection Airborne Ground Penetrating Radar (UXO GPR)		\$3.903	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000
9999 / Congressional Adds		\$0.000	\$16.500	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project 0164: Combat Systems Integration/Strike Force Interoperability:
COMNAVSEASYSCOM (SEA 06) is assigned central responsibility for interoperability, directing the development of policy and architecture for Strike Force warfare systems engineering and implementation of a common warfare systems engineering process. Furthermore, SEA 06 provides top level direction and execution for certification and assessments which support capability and quality for ships and submarines. SEA 06 has developed processes and tools including the establishment of a force-level warfare systems engineering process, stewardship of the introduction of C5I modernization and improvement into the Fleet Response Plan (FRP), configuration management and certification processes, and force-level interoperability assessments using the Distributed Engineering Plant (DEP) land-based testing tool. This project funds the core elements required to conduct Warfare Systems Integration and Interoperability Testing (WSI2T) in accordance with the Naval Joint Instruction Warfare Systems Certification Policy (NWSCP).

This project funds Strike Force (SF) requirements engineering and analysis. This includes SF configuration management through the Fleet Response Plan (FRP), shore based testing and Warfare System Integration and Interoperability Testing (WSI2T) certification of operational computer systems in a test environment similar to their ultimate shipboard operational environment, and Interoperability Assessments (IA) which are a prerequisite for operational Certification of the Strike Force configuration prior to deployment. Force Certification of deploying Strike Force configurations is accomplished through the utilization of the Navy's Distributed Engineering Plant (DEP), which provides operational configurations for all Naval combat systems located at multiple (15) Navy & Industry land-based sites located across the country and connected via ATM networking technology. The DEP provides the only opportunity for comprehensive interoperability testing of combat system and C5I configuration items prior to shipboard delivery for operational use in surface combatant platforms and battle group units. It is a Fleet Forces Command requirement that all Strike Forces undergo Interoperability Assessments (IA) in the DEP prior to deployment. Further, the DEP provides the mechanism to support the Navy's participation in the Joint Distributed Engineering Plant (JDEP) as well as the coalition forces through the Combined Forces Battle Laboratories (CFBL) network to allow for assessments of both Joint and Coalition interoperability. Project funding of international armaments cooperation to include international data exchange (DEA) further improves coalition warfighting.

Through the implementation of the Fleet Response Plan (FRP), the Navy has made considerable improvements in Naval Force Interoperability. Interoperability Assessments (IA) testing in the Distributed Engineering Plant has identified recurring interoperability problems, which have then been prioritized into 21 main categories by Strike Group Commanders and their staffs. SEA 06 has prioritized possible interoperability fixes and coordinated with combat system managers to identify how to resolve critical interoperability problems for near term fielding as an interim path to achieving the Navy's combat systems

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EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE Combat Systems Integration/Strike Force Interoperability 0603582N				
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011

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

Project 0164 Combat Systems Integration/Strike Force Interoperability Continued:

improvements associated to those corrections. In accordance with this direction, the Navy is implementing a plan to fund Common Network Interface (CNI) upgrades to existing legacy COTS hardware on Navy LHAs and develop common interoperable software compliant with the Navy's OA standards to integrate the data from ship's sensors, external links, and FORCEnet sources into an operational picture for the warfighter and an output to the legacy weapons control system.

Project 9356/9357/9527/9530/9531/9532/9999: Directed Energy related efforts:

These Congressional adds fund directed energy and electric weapons development efforts.

Project 9529: Context Adaptable Autonomous & Remote Unmanned System Operation (CARUSO):

This Congressional add funds research of advanced Undersea Unmanned Vehicle (UUV) human/system interaction technologies.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164 CSI/SFI
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B. Accomplishments/Planned Program

SF Requirements Engineering and Analysis		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		2.048	2.538	2.886
RDT&E Articles Quantity		N/A	N/A	N/A

Completed documentation of Phase I of Strike Force Interoperability requirements documentation. In FY05, the program is developing additional scenarios to reflect updated Strike Force Interoperability engineering requirements necessary to respond to the Fleet Response Plan (FRP). In FY06 & FY07, the program will develop multi-mission strike scenarios and evaluate interoperability performance by establishment of levels of operational performance and systems operability. Development of these standards will be essential to the evaluation of emerging combat system capabilities, such as Open Architecture. Continue developing data sets that can be used to apply to quantifiable and measurable Strike Force I/O reqs.

FRP		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		6.521	5.441	5.204
RDT&E Articles Quantity		N/A	N/A	N/A

FY05: Continue execution of the FRP for all Strike Groups in the deployment cycle, including: SFIO efforts, SG Change Control Process, SG Capabilities and Limitations Report and Engineering assessments. Continue configuration management for all strike groups. Continue development of AMPS and Electronic Configuration Control Board (ECCB). In FY06, FY07 and beyond, 25 + Strike Groups are being evaluated in some phase of the Fleet Response Plan (FRP), Over 27 Capabilities and Limitations Documents will be delivered, and over 12000 configuration change requests will be processed.

Platform Certification		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		12.174	9.231	7.307
RDT&E Articles Quantity		N/A	N/A	N/A

FY05-07 plans include Warfare System Integration and Interoperability Testing (WSI2T) of Ship Self Defense System (SSDS) MK-2 Mods 1-2 combat systems and associated elements for CVN/LHD/LHA/LPD ship classes and Test Bed Validation. FY07-FY11 continue planning for out-year PIT to include CVN 77, LCS, LPD 17, CVN 21, Open Architecture combat systems as well as integration of new combat system capabilities.

Strike Force Interoperability Certification		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		8.334	11.200	10.672
RDT&E Articles Quantity		N/A	N/A	N/A

In FY05, conducted DEP testing and data analysis of complex computer program configurations necessary to characterize Strike Force Interoperability of deploying forces. Carrier Strike Group (CSG) Interoperability Assessment (IA) ISO USS RONALD REAGAN. Conducted Interoperability Systems Engineering Tests (ISETs) for root cause determination of key interoperability problems and in support of development of new force level combat system capability. Plans include conducting Interoperability Assessment (IA) testing for USS JOHN C. STENNIS CSG'S FY07 deployment; USS EISENHOWER CSG; and USS VINSON CSG's FY07 deployment. FY06-07 plans include Interoperability Assessments (IAs) for FY08 & 09 deployers as well as collaborative system testing of strike force capabilities.

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164 CSI/SFI
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B. Accomplishments/Planned Program (Cont.)

DEP Engineering and Operations	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	10.600	7.081	5.638
RDT&E Articles Quantity	N/A	N/A	N/A

Performs systems engineering, development, test, and assessment of developmental and deploying complex combat system baselines through the use of the Distributed Engineering Plant (DEP). Organize test requirements and develop test procedures assessing root-cause interoperability issues associated with complex computer program configurations for deploying strike force groups. Conduct systems engineering to identify simulation/stimulation requirements necessary to achieve required fidelity for DEP testing at Navy laboratory sites through verification, validation and accreditation. Evaluates network requirements for distributed test events, work with other Service R&D laboratories to identify system and test requirements supporting evaluation of joint system interoperability and the development of open system architecture baselines. Funds critical technical activity in force interoperability necessary to support all user communities of this important land-based test capability. i.e. acquisition; fleet; and industry. In 05: Integrated the Ship Aviation Integration Lab (NAVAIR PAX) and completed integration of Open Architecture Test Facility (OATF). FY06 - FY07 Integrate Combat Systems Engineering Development Site (CSEDS) into DEP network and provide systems and network engineering to support joint and coalition testing events.

Interoperability Fixes	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.721	1.976	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

There are currently 890 unresolved unique interoperability problems identified through SFIT, SGSIT, NCTSI, SSA, TEMP 801 testing, OIF, CLF/CPF lessons learned, and CEC OPEVAL that have been divided into 21 categories prioritized by the Fleet. Funding is dedicated to develop and implement interoperability fixes to combat systems, and to validate and certify completed fixes at the platform and Strike Force level through land-based testing. In accordance with DEPSECDEF Guidance of Oct 2001, interoperability problem corrections are evaluated according to their ability to improve the operational performance of deploying Strike Forces. An additional 26 fixes were available to field in FY2005 that capture system level interoperability fixes, lessons learned from Operation Iraqi Freedom, and coordinated multi-system solutions of strike force interoperability problems in CEC 2.1, SSDS, E2C, AWS 6.1.7, SGS/AC and C2P/CDLMS. FY2005 funds allow for completion of the FY2004 package. FY2006: Funding supports analysis and assessment methodology to identify engineering changes required to correct interoperability at the system design phase. There is no funding programmed for future interoperability fix packages per ASN (RDA) direction.

JDEP	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	4.876	4.600	4.960
RDT&E Articles Quantity	N/A	N/A	N/A

Funds Navy participation in Joint Distributed Engineering Plant (JDEP) and related land-based test events and systems engineering activities. The Defense Planning Guidance (DPG) updated for FY 2002-2007 states that the JDEP program was established as a DoD-wide effort to link existing service and joint combat system engineering and test sites. The JDEP is the lead infrastructure used for the evaluation of coordinated, joint engineering events, which include the validation of next-generation algorithms implementing the Single Integrated Air Picture (SIAP). Funds support Navy participation in JDEP approved test events and test bed improvements needed to conduct testing. FY05 events included Joint Combined Hardware in the Loop Event (JCHE) Phase II, Sea Based BMD/Early Warning and Multi-Service Distributed Engineering Events. FY06 events include Link 16/Coalition Networking, IABM, and SPYOA proposals. In FY06 and FY07, JDEP will support initiatives in alignment with OSD Joint Testing Roadmap signed 12 November 2004 to include JCHE follow-on Phases and Joint Battle Management Command and Control (JBMC2) Roadmap Joint Mission Thread (JMT) validation.

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164 CSI/SFI
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B. Accomplishments/Planned Program (Cont.)

REAGAN Strike Force Interoperability	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.375	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

The USS RONALD REAGAN (CVN 76), its associated combat system, and other Strike Group (SG) upgrades, is a complex convergence of multiple platforms, systems, and sub-systems. In FY2005, funds were focused on completing Phases II through IV of a 4 phase REAGAN Strike Group Team Strategy that supports (FRP). The Phase II events were designed to characterize the performance of SPQ-9B and BFIT, advanced Detect to Engage (DTE), Strike Group I/O, Link 4A/11/16, Composite Surface Tracking, and Low/Slow Flyer. Phase III events were designed to demonstrate the performance of Advance DTE, Link 4A/11/16, complete missile firings, Strike Group Track Management and SG level reporting/weapons coordination. Phase IV efforts focused on training and I/O evaluation during pre-Combat System Ship Qualification Trial (CSSQT) and CSSQT events. These combined efforts are critical to finalizing the delivery of a fully mission capable REAGAN Strike Group that is interoperable with the force.

CNI/OA Transformation Roadmap	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	25.000	25.243	25.428
RDT&E Articles Quantity	N/A	N/A	N/A

In FY2005, funds provide for SBIR Phase III efforts to develop Common Network Interface Capabilities for the ESG Commander and Staff to direct Battleforce Operations. The Common Network Interface (CNI) is a Commercial Off-The-Shelf (COTS) open interface system designed to modernize C4I and Combat Systems (C5I) on ships not programmed to receive Open Architecture (OA) upgrades. CNI is an Open Architectural Situational Awareness " machine " providing the Joint Track Manager/OATM linkage to the ACDS Block 0 in LHA/LHD. In FY2006, begin phased CNI upgrades to the existing legacy COTS hardware and common interoperable software compliant with the Navy's OA standards to integrate the data from ship's sensors, external links, and FORCEnet sources into an operational picture for the warfighter and an output to the legacy weapons control system. In FY2007, these operational capability improvements are achieved in a cost effective manner by initiating spiral development, "build-test-build" programmatic and processes pioneered by the Acoustics Rapid COTS Insertion (ARCI) and Advanced Processing Build (APB) processes which minimizes legacy system/subsystem technical disruption. CNI ensures the upgraded ships stay current with Navy Open Architecture and Joint

OA Automated Test and Re-Test	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	N/A	8.500	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

Open Architecture Automated Test and Re-Test Capability: Funds added to program to support software engineering upgrades to the Distributed Engineering Plant (DEP) Laboratories to enable rapid test and re-test of Open Architecture software modules and associated improvements. In FY06, funds are needed to establish the requirements and architecture necessary for the DEP to test the rapid and affordable introduction of new capabilities into future combat systems.

MDTEC (Maritime Directed Energy Test)	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

These funds were provided by Congressional Plus Up. Project 0164 MDTEC funding was provided to accomplish the Directed Energy Study as directed by Congress.

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164/9356/9357/9527/9529/9530/9531/9532 CSI/SFI
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget:	74.339	76.975	65.436
FY07 President's Budget:	76.649	75.810	62.095
Total Adjustments	2.310	-1.165	-3.341

Summary of Adjustments

Other General Provisions	-0.093	-1.165	
BTR	3.375		
SBIR	-0.972		
Other misc. changes			-3.341
Subtotal	2.310	-1.165	-3.341

Schedule:
See R4/R4A Schedule.

Technical:

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APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164/9356/9357/9527/9529/9530/9531/9532 CSI/SFI
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D. OTHER PROGRAM FUNDING SUMMARY:

Related RDT&E: Computer programs developed under these programs are tested in their integrated configuration.

- PE 0204571N (Consolidated Training Systems Development)
- PE 0205620N (Surface ASW Combat System Technology)
- PE 0603382N (Advanced Combat System Technology)
- PE 0603755N (Ship Self Defense Dem/Val)
- PE 0603658N (Cooperative Engagement Capability)
- PE 0604307N (AEGIS Combat Systems Engineering)
- PE 0604755N (Ship Self Defense - EMD)
- PE 0604518N (CIC Conversion/Common Command and Decision)
- PE 0603879N (Single Integrated Air Picture)
- PE 0605853N (CHENG)
- PE 0603925N Directed Energy and Electric Weapon Systems

Related Procurement:

OPN 296000 (ICSTF/DEP: Integrated Combat System Test Facility/Distributed Engineering Plant)	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>FY2008</u>	<u>FY2009</u>	<u>FY2010</u>	<u>FY2011</u>
	\$4.6	\$4.3	\$4.3	\$4.4	\$4.6	\$4.7	\$4.9

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS:

Naval Surface Warfare Center, Dahlgren Division, VA - Distributed Engineering Plant (DEP), Strike Force Interoperability Requirements (SFIR), and Strike Force Interoperability Operational Advisory Group (SFI OAG) efforts.
 General Dynamics - Advanced Information Systems (GD-AIS) Digital Systems Resources, Inc. (DSR), Fair Lakes, VA- Prime contractor for Common Network Interface (CNI).

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Exhibit R-3 Cost Analysis (page 1)					DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROJECT NUMBER AND NAME								
RDT&E,N/BA-4			0603582N CSI/SFI								
Cost Categories	Contract Method & Type	Performing Activity & Location	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SF Interoperability Requirements	WR/RC	NSWC	0.637	10/04	0.757	10/05	1.027	10/06	CONT.	CONT.	
SF Interoperability Requirements	WR/RC	VARIOUS	1.500	10/04	1.432	10/05	1.859	10/06	CONT.	CONT.	
FRP	WR/RC	NSWC PHD	2.641	10/04	2.892	10/05	3.266	10/06	CONT.	CONT.	
FRP	WR/RC	NSWC DD	2.772	10/04	2.092	10/05	1.938	10/06	CONT.	CONT.	
FRP	WR/RC/PD	VARIOUS	1.108	10/04	0.000		0.000		CONT.	CONT.	
Platform Certification	WR/RC	NSWC PHD	7.932	10/04	6.900	10/05	6.174	10/06	CONT.	CONT.	
Platform Certification	WR/RC	VARIOUS	1.882	10/04	1.666	10/05	1.133	10/06	CONT.	CONT.	
Strike Force Interoperability Cert	WR/RC	NSWC DD	2.350	10/04	10.200	10/05	4.144	10/06	CONT.	CONT.	
Strike Force Interoperability Cert	WR/RC/PD	VARIOUS	1.999	10/04	0.000		3.314	10/06	CONT.	CONT.	
DEP Engineering and Operations	WR/RC	NSWC DD	8.909	10/04	6.111	10/05	5.368	10/06	CONT.	CONT.	
DEP Engineering and Operations	WR/RC/PD	VARIOUS	1.657	10/04	0.000		0.000		CONT.	CONT.	
Interoperability Fixes	WR/RC	NSWC DD	1.295	10/04	1.500	10/05	0.000		CONT.	CONT.	
Interoperability Fixes	WR/RC	NSWC DD-CDSA Df	0.500	10/04	0.000		0.000		CONT.	CONT.	
JDEP	WR/RC	NSWC DD	3.331	10/04	3.295	10/05	3.290	10/06	CONT.	CONT.	
JDEP	WR/RC	VARIOUS	1.545	10/04	1.305	10/05	1.670	10/06	CONT.	CONT.	
REAGAN SG	VARIOUS	VARIOUS	3.375	10/05	0.000		0.000		CONT.	CONT.	
CNI/OA Transformation Roadmap	WR/RC	NSWC DD	4.000	10/04	7.532	10/05	6.500	10/06	CONT.	CONT.	
CNI/OA Transformation Roadmap	VARIOUS	VARIOUS	21.000	11/04	17.711	11/05	18.928	11/06	CONT.	CONT.	
OA Test and Retest	VARIOUS	VARIOUS	0.000		8.500	10/05	0.000		CONT.	CONT.	
Contract Engineering Support	VARIOUS	VARIOUS	4.866	11/04	2.567	11/05	2.134	11/06	CONT.	CONT.	
Contract Program Mgt Support	VARIOUS	VARIOUS	1.100	11/04	1.100	11/05	1.100	11/06	CONT.	CONT.	
Travel		NAVSEA TRAVEL	0.250	09/05	0.250	09/06	0.250	09/07	CONT.	CONT.	
Subtotal Product Development			74.649		75.810		62.095				
Remarks:											

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Fiscal Year	2005				2006				2007				
	Quarter	1	2	3	4	1	2	3	4	1	2	3	4
CVN 76 WSI2T	■	□								□			
LSD 41/49 WSI2T				□									
LPD 17/18/19 WSI2T	■		□										
FFG 7 LEVEL 13 WSI2T					□								
CVN 75 WSI2T					□								
FFG 7 LEVEL 12 WSI2T		□			□								
LHD 2/4/5 WSI2T								□					
CVN 68 WSI2T						□							
LHA 2 WSI2T		□											
LHA 2/4 WSI2T						□							
CVN 70 WSI2T													
CV 63, CVN 65/73 WSI2T													
CVN 74 WSI2T	■	■											
CVN 69 WSI2T	■	□	□										
LHD 3/6 WSI2T				□									
LHA 1/5 WSI2T					□								
CVN 71/72 WSI2T							□						
CVN 77 WSI2T										□			

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Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4						PROJECT NUMBER AND NAME 0164 CSI/SFI		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
ABRAHAM LINCOLN FIT								
GEORGE WASHINGTON FIT								
HARRY S. TRUMAN FIT								
NIMITZ FIT								
THEODORE ROOSEVELT FIT								
ENTERPRISE FIT								
SEE -01	1Q	1Q	1Q	1Q				
SEE -02	1Q	1Q	1Q	1Q				
SEE -03	2Q	2Q						
SEE -04	3Q	3Q						
SEE -05	3Q							
SEE -06	4Q							
LHA 1/5 WSI2T	4Q	1Q						
FFG 7 WSI2T								
CVN 76 WSI2T	1/2/3Q		1Q/2Q					
LSD 41/49 WSI2T	3Q/4Q							
FFG 7 LEVEL 13 WSI2T								
FFG 7 LEVEL 12 WSI2T	2Q/3Q							
LHD 2/4/5 WSI2T		3Q/4Q						
SSDS MK2 MOD1 WSI2T(CVN 68)	1Q							
LHA 4 WSI2T	2Q/3Q	1Q/2Q						
CVN 74 WSI2T	1/2/3/4Q							
CV63, CVN 65/73 WSI2T								
CVN 71/72/75 WSI2T		2Q/3Q						
SSDS MK2 MOD 1 WSI2T (CVN 69)	1Q/2Q/3Q		1Q/2Q					
LHD 3/6 WSI2T	3Q/4Q							
CVN 70 WSI2T				3Q/4Q				
CVN 68 WSI2T		1Q/2Q						
CVN 77 WSI2T			1-4Q	1-3Q				
LHD 1/4/5 WSI2T				2Q/3Q				
NAVY JOINT TEST	4Q	3Q/4Q						

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 10 of 12)

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EXHIBIT R4, Schedule Profile					DATE: February 2006							
APPROPRIATION/BUDGET ACTIVITY PROGRAM ELEMENT NUMBER AND NAME RDT&E,N/BA-4 0603582N SFI					PROJECT NUMBER AND NAME 0164							
Fiscal Year	2005				2006				2007			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
SEE 05-01	▲											
FSEC CEC/LTN Event	▲											
SEE 05-02	▲											
IA 05-01		▲										
SEE 05-03			▲									
DEP VV&A				△								
SEE 05-04				△								
JDEP EW/SBBMD				△								
SEE 05-05				△								
IA 05-02				△								
JDEP DTE5				△								
SEE 05-06				△								
DEP VV&A				△								
SEE 06-01				△								
IA 06-01				△								
SEE 06-02				△								
SEE 06-03				△								
IA 06-02				△								
SEE 06-04				△								
IA 06-03				△								
IA 06-04				△								
DEP VV&A				△				△				
SEE 07-01								△				
IA 07-01								△				
SEE 07-02								△				
SEE 07-03								△				
IA 07-02								△				
SEE 07-04								△				
IA 07-03								△				
IA 07-04								△				
DEP VV&A								△				△

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NOTE 1: 6 SEEs and 2 IA's are scheduled for FY07

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 9999 / Various Congressional Plus Ups

B. FY06 Congressional Plus Ups

Lasers for Navy Applications	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	3.400	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
 Proj #9823N (\$3,400K) will continue to provide the analyses associated with laser charring of composite radomes and the resultant decrease of the signal-to-noise ratio that would cause the incoming missile to break lock and decrease its Pk. Funds are required to plan, accomplish, and analyze full-scale static tests using the existing to perform laser-induced charring on actual anti-ship missiles.

LIPC (Laser Induced Plasma Channeling)	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	11.100	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
 Project 9357C funding (\$11,100K) is provided for the development and delivery of a mobile prototype at increased power and range.

Optical Line Replacement Units	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	1.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
 Project 9824N is for design and development of optical line replaceable units showing increased power densities and increased beam quality for application to tactical High Energy Laser (HEL) Systems.

Trouble Report Information Database	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	1.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
 Project 0164C. Funds provided to extend the Knowledge Management System of the Trouble Report Warehouse to use business modeling practices to monitor Combat System baselines and to alert stakeholders and technical warrant holders of issues that effect Warfare Systems Engineering certification.

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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE								
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	0603609N/Conventional Munitions								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011		
Total PE Cost	32.258	36.385	22.385	23.214	23.561	26.207	26.773		
0363/Insensitive Munitions Advanced Development	0.000	3.061	2.608	2.962	2.971	3.074	3.185		
1821/Conventional Fuzed Warhead Package	8.273	8.863	9.858	10.242	10.600	12.973	13.282		
2299/Non-Nuclear Expendable Ordnance	23.985	24.461	9.919	10.010	9.990	10.160	10.306		

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Conventional Fuzed Warhead Package (Project 1821): 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.

Non-Nuclear Expendable Ordnance (NNEO) (Project 2299): This item addresses improvements to Navy surface launched (2T) NNEO. It supports transition of the Multi-Function Fuze (MMF) from E&MD to production.

Insensitive Munitions Advanced Development (IMAD) (Project 0363): 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.

R-1 SHOPPING LIST - Item No. 55

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603609N/Conventional Munitions
<p>B. PROGRAM ACCOMPLISHMENTS AND PLANS: The Guidance Integrated Fuze (GIF) program is the major constituent of the NNEO budget line. Other NNEO programs include the Multi-Function Fuze (MFF) P3I and the Extended Range Propelling Charge.</p> <p>1. FY2005 PLANS: 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).</p> <p>2. FY2006 PLANS: 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.</p> <p>3. FY2007 PLANS: GIF: Complete qualification tests of downselected GIF design. Conduct Preliminary Design Review and Test Readiness Review in preparation for Developmental Test (DT-IIB). Conduct initial user evaluation followed by TECHEVAL. Advanced Shotgun Projectile (ASP): Conduct initial design-build-test cycle for ASP. Perform laboratory tests, modeling and limited ballistic tests on initial design.</p>	

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 2 of 23)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME 1821/Conventional Fuzed Warhead Package			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	8.273	8.863	9.858	10.242	10.600	12.973	13.282	
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 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROJECT NUMBER AND NAME 1821/Conventional Fuzed Warhead Package												
B. Accomplishments/Planned Program													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 15%; text-align: center;">FY 06</td> <td style="width: 15%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">1.100</td> <td style="text-align: center;">2.230</td> <td style="text-align: center;">2.292</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>		FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	1.100	2.230	2.292	RDT&E Articles Quantity				<div style="border: 1px solid black; padding: 5px;"> <p>Micro-Electro-Mechanical System Safe and Arm Device:</p> <p>FY 05: Complete advanced development of MEMS-based distributed Safe and Arm Device. Complete testing and perform data analysis of multi-point arm and fire device. Document advance development effort, fabricate and assemble hardware and perform ordnance section all-up system test. Transition to SD&D and start integration contracting preparation.</p> <p>FY06: System Development and Demonstration (SD&D) contract award. Build Safe and Arm Device. Integrate with warhead and test.</p> <p>FY07: Continue SD&D.</p> </div>
	FY 05	FY 06	FY 07										
Accomplishments/Effort/Subtotal Cost	1.100	2.230	2.292										
RDT&E Articles Quantity													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 15%; text-align: center;">FY 06</td> <td style="width: 15%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">0.100</td> <td style="text-align: center;">0.100</td> <td style="text-align: center;">0.180</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>		FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.100	0.100	0.180	RDT&E Articles Quantity				<div style="border: 1px solid black; padding: 5px;"> <p>Future Standard Missile Systems (FSMS) Studies:</p> <p>FY 05/06/07: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.</p> </div>
	FY 05	FY 06	FY 07										
Accomplishments/Effort/Subtotal Cost	0.100	0.100	0.180										
RDT&E Articles Quantity													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 15%; text-align: center;">FY 06</td> <td style="width: 15%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">7.073</td> <td style="text-align: center;">6.533</td> <td style="text-align: center;">7.386</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>		FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	7.073	6.533	7.386	RDT&E Articles Quantity				<div style="border: 1px solid black; padding: 5px;"> <p>Advanced Fuze Technology Development:</p> <p>FY 05 - Conduct risk reduction and other preparations for transitioning advanced fuze technologies to System Development and Demonstration.</p> <p>FY06 - Continue to conduct risk reduction and other preparations for transition advanced fuze technologies to System Development and Demonstration.</p> <p>FY07 - Implement advanced fuze technologies to System Development and Demonstration.</p> </div>
	FY 05	FY 06	FY 07										
Accomplishments/Effort/Subtotal Cost	7.073	6.533	7.386										
RDT&E Articles Quantity													

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 4 of 23)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME 1821/Conventional Fuzed Warhead Package

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget	8.578	8.998	12.673
FY07 President's Budget	8.273	8.863	9.858
Total Adjustments	-0.305	-0.135	-2.815
Summary of Adjustments			
Other General Provisions	-0.211	-0.135	
Below Threshold Reprogramming	-0.094		
Programmatic Changes			-2.815
Subtotal	-0.305	-0.135	-2.815

Schedule: Not Applicable

Technical: Not Applicable

R-1 SHOPPING LIST - Item No. 55

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 23)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME 1821/Conventional Fuzed Warhead Package
D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable		
E. ACQUISITION STRATEGY: Not Applicable		
F. MAJOR PERFORMERS: Raytheon Company, Tucson, AZ; SM-2 Block IIIB MK 45 MOD 14 TDD development NSWC Dahlgren, Dahlgren, VA; Advanced Warhead Technology Analysis; NAWC China Lake		

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 23)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603609N/Conventional Mun		1821/Conventional Fuzed Warhead Package							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Dahlgren	12.987							0.000		
	WR	NAWC China Lake	15.582							0.000		
	WR	WSMR								0.000		
	CPAF	Raytheon								0.000		
	WR	NSWC Port Hueneme	0.762							0.000		
Subtotal T&E			29.331	0.000		0.000		0.000				
Remarks:												
Program Management Support	WR	NSWC Dahlgren	2.074							0.000		
	WR	NAWC China Lake	3.360							0.000		
	C/FPI	Various	6.481	0.300	11/04	0.300	11/05	0.300	11/06	Continuing	Continuing	
	RC	NSWC Indian Head	0.160							0.000		
Travel	PD	NAVSEA Travel	0.400							Continuing	Continuing	
Subtotal Management			12.475	0.300		0.300		0.300				
Remarks:												
Total Cost			248.995	8.273		8.863		9.858		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4		PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions			PROJECT NUMBER AND NAME 2299 Non-Nuclear Expendable Ordnance (NNEO)				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			23.985	24.461	9.919	10.010	9.990	10.160	10.306
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 Advanced Shotgun Projectile. 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. The Advanced Shotgun Projectile effort consists of determining a "Best Value" approach to providing a projectile with effectiveness beyond the existing 5 inch Force Protection Rounds (HE-ET and KE-ET) with application to all 5" Guided Weapon System (GWS) mission requirements. An Analysis of Alternatives type study will be conducted to determine the feasibility of pursuing an Advanced Shotgun Projectile with mission kill capability against the entire range of 5" GWS target threats. Initial concepts will focus upon utilizing a fragmenting steel case with a high density pre-fragmented payload to minimize parasitic mass and provide guaranteed lethal fragments on target.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4	PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions	PROJECT NUMBER AND NAME 2299 Non-Nuclear Expendable Ordnance (NNEO)																	
B. Accomplishments/Planned Program																			
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		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		0.378	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> OPEVAL completion delayed from 4th quarter FY 04 to 1st quarter FY05 due to weather conditions at test range. Residual tasks in preparation for Milestone C review completed in FY05. </div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 15%;"></th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">23.283</td> <td style="text-align: center;">24.461</td> <td style="text-align: center;">9.919</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td style="text-align: center;">10</td> <td style="text-align: center;">25</td> <td style="text-align: center;">100</td> </tr> </tbody> </table>							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		23.283	24.461	9.919	RDT&E Articles Quantity		10	25	100
		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		23.283	24.461	9.919															
RDT&E Articles Quantity		10	25	100															
<div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> 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. </div>																			
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		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		0.324	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> The Advanced Shotgun Projectile will provide a 5" projectile that is effective against the entire range of 5" GWS targets. </div>																			

R-1 SHOPPING LIST - Item No. 55

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4	PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions	PROJECT NUMBER AND NAME 2299 Non-Nuclear Expendable Ordnance (NNEO)		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
FY06 President's Budget:		25.236	24.834	10.033
FY07 President's Budget:		23.985	24.461	9.919
Total Adjustments		-1.251	-0.373	-0.114
Summary of Adjustments				
Other General Provisions		-0.051	-0.373	
Other misc. changes:				-0.114
Above Threshold Reprogramming		-1.200		
Subtotal		-1.251	-0.373	-0.114
Schedule:				
Not Applicable				
Technical:				
Not Applicable				

R-1 SHOPPING LIST - Item No. 55

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions			PROJECT NUMBER AND NAME 2299 Non-Nuclear Expendable Ordnance (NNEO)				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
BLIN 025000 5"/54 Ammunition	0.7	0	0	0	0	0	0	N/A	0.7
E. ACQUISITION STRATEGY: *									
Award contracts for developing prototype GIF fuze. Award contract to develop a producible design with builds of 25 and 100. Evaluate 25 fuzes from contractor in laboratory and simulated gun launch conditions to assess guidance, navigation and control features, conventional fuzing functions and shock survivability. Complete additional design-build-test cycle, resulting in contractor providing 100 fuzes for government evaluation. Award 1,250 fuze option for full spectrum of laboratory, simulation and gun launch tests. Navy GIF program is collaborating with Army CCF program under the direction of USD AT&L.									
F. MAJOR PERFORMERS: **									
MFF: Contractor - Alliant Tech Systems (ATK), Janesville, WI - Awarded July 99 Gov't - Naval Surface Warfare Center, Dahlgren Division, Dahlgren, VA 5 inch Advanced Shotgun Projectile: Gov't - Naval Surface Warfare Center, Dahlgren Division, Dahlgren, MD Guidance integrated Fuzing - Contractor - Mayflower Communications, Boston, Massachusetts Gov't - Naval Surface Warfare Center, Dahlgren Division, Dahlgren, Virginia Army Research, Development & Engineering Center (ARDEC), Picatinney Arsenal, Picatinney, NJ									
* Not required for Budget Activities 1,2,3, and 6 ** Required for DON and OSD submit only.									

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N / BA 4				0603609N Conventional Munitions				2299 Non-Nuclear Expendable Ordnance (NNEO)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/04 Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC Dahlgren - MFF	1.933										1.933	
	WR	NSWC Dahlgren - ASP				0.324	Feb-05	0.445	Oct-05		Oct-06	Continuing	Continuing	
	C/CPFF	ALLIANT - MFF	1.054										1.054	
	SS/CPFF	MOTOROLA - MFF	0.336										0.336	
	WR	NSWC Indian Head - ERPC	0.600			0.439	Oct-04					Continuing	Continuing	
	CPFF	Mayflower Communications - GIF	8.197			4.573							12.770	
	CPFF	CAES - GIF	2.600			2.800	Feb-05						5.400	
	CPFF	Toyon - GIF	0.800			0.500	Mar-05						1.300	
	CPFF	TBD - GIF				3.100	Sep-05	13.462	Oct-05	3.646	Oct-06	Continuing	Continuing	
Ancillary Hardware Development													0.000	
Component Development													0.000	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering	WR	NSWC Dahlgren - ASP						0.100	Oct-05				0.100	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			15.520			11.736		14.007		3.646		0.000	Continuing	
Remarks:														
Development Support	WR	NSWC Dahlgren - GIF	3.103			0.318	Oct-04	0.350	Oct-05	0.250	Oct-06	Continuing	Continuing	
Development Support	WR	DOE Sandia - GIF				0.700	Dec-04	3.400	Dec-05			Continuing	Continuing	
Software Development	WR	NSWC Dahlgren - GIF	0.275			0.200	Oct-04	0.100	Oct-05			Continuing	Continuing	
Training Development	WR	NSWC Dahlgren - GIF				0.125	Oct-04					Continuing	Continuing	
	WR	NSWC Dahlgren - ASP										Continuing	Continuing	
Training Development	MIPR	ARDEC - GIF				0.350	Oct-04					Continuing	Continuing	
Integrated Logistics Support	WR	NSWC Dahlgren - GIF				0.175	Oct-04	0.175	Oct-05			Continuing	Continuing	
Integrated Logistics Support	MIPR	ARDEC - GIF				0.480	Oct-04	0.175	Oct-05	0.170	Oct-06	Continuing	Continuing	
Configuration Management	WR	NSWC Dahlgren - GIF	0.350			0.400	Oct-04	0.400	Oct-05	0.400	Oct-06	Continuing	Continuing	
Contract Support	WR	NSWC Dahlgren - GIF	0.150			0.350	Oct-04	0.250	Oct-05	0.150	Oct-06	Continuing	Continuing	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			3.878			3.098		4.850		0.970		0.000	Continuing	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROJECT NUMBER AND NAME										
RDT&E, N / BA - 4				2299 Non-Nuclear Expendable Ordnance (NNEO)										
PROGRAM ELEMENT														
0603609N Conventional Munitions														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/04 Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract		
Developmental Test & Evaluation	WR	NSWC Dahlgren - GIF	3.178	2.018	Oct-04	1.100	Oct-05	2.408	Oct-06	Continuing	Continuing			
	WR	NSWC Dahlgren - MFF	0.472									#REF!		
	WR	NSWC Dahlgren - ASP				0.169	Oct-05			Continuing	Continuing			
	WR	NSWC China Lake - MFF	0.200									0.200		
	WR	US Army Redstone - GIF	0.800	0.800	Nov-04							1.600		
	WR	ARL - GIF	0.300	1.200	Oct-04						Continuing	Continuing		
Operational Test & Evaluation	WR	COMOPTEVFOR - MFF	0.400	0.028	Oct-04						Continuing	Continuing		
	WR	COMOPTEVFOR - GIF		0.330	Oct-04							0.330		
	WR	NSWC Dahlgren -MFF	0.128	0.050	Oct-04						Continuing	Continuing		
	MIPR	ARDEC - GIF		0.950	Oct-04	0.300	Oct-05				Continuing	Continuing		
Live Fire Test & Evaluation											0.000			
Test Assets	C/CPFF	ALLIANT - MFF	0.361									0.361		
	WR	NSWC Indian Head - GIF		0.400	Oct-04						Continuing	Continuing		
Tooling												0.000		
GFE												0.000		
Award Fees												0.000		
Subtotal T&E			5.839	5.776		1.569		2.408		0.000	Continuing			
Remarks:														
Contractor Engineering Support	FP	EDO - MFF	0.032									0.032		
	C/CPFF	ALLIANT - MFF	0.113									0.113		
	FP	Various	0.500	0.300	Oct-04	1.050	Nov-05	0.500	Nov-06	Continuing	Continuing			
Government Engineering Support	WR	NSWC Dahlgren - GIF	4.558	2.125	Oct-04	2.125	Oct-05	1.900	Oct-06	Continuing	Continuing			
Government Engineering Support	WR	NSWC Dahlgren - MFF	0.098	0.300	Oct-04							0.398		
Government Engineering Support	MIPR	ARDEC/ARL - GIF	0.400	0.000	Oct-04	0.400	Oct-05	0.200	Oct-06	Continuing	Continuing			
Program Management Support	WR	NSWC Dahlgren - GIF	0.443	0.650	Oct-04	0.310	Oct-05	0.295	Oct-06	Continuing	Continuing			
Program Management Support	MIPR	ARDEC - GIF	0.200	0.000	Oct-04	0.150	Oct-05				Continuing	Continuing		
Travel	WR	NSWC Dahlgren - MFF	0.020									0.020		
Labor (Research Personnel)												0.000		
SBIR Assessment	WR	Dahlgren										0.000		
Subtotal Management			6.364	3.375		4.035		2.895		0.000	Continuing			
Remarks:														
Total Cost			31.601	23.985		24.461		9.919		0.000	Continuing			
Remarks: Financial data reflects new schedule agreed to by Navy, Army and USD AT&L.														

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME 0363/Insensitive Munitions Advanced Development			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	0.000	3.061	2.608	2.962	2.971	3.074	3.185	
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 (IM) 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 IM 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 IM requirement has been developed. Insensitive munitions are identified as a DoD critical technology requirement and considered as part of a weapon design.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME 0363/Insensitive Munitions Advanced Development
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	1.107	1.000	
RDT&E Articles Quantity				

Validate and assess weapon systems POA&M's for IM compliance. Compile and analyze weapon system, energetic material and generic technology IM test data.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.600	0.424	
RDT&E Articles Quantity				

Demonstrate high explosives that show improved IM characteristics while maintaining or improving operational performance. Evaluate pressed and cast metal accelerating explosives. Complete qualification of high performance booster explosive for multiple weapons systems. Begin qualification of best candidate metal accelerating explosive.
 Accomplishments: Demonstrated high explosives that show improved IM characteristics while maintaining or improving operational performance. Evaluation of pressed metal accelerating explosives.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.346	0.600	
RDT&E Articles Quantity				

Evaluate and Demonstrate IM gun propulsion systems which provide improved or comparable performance to in-service systems and have improved IM characteristics.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME 0363/Insensitive Munitions Advanced Development
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.508	0.434	
RDT&E Articles Quantity				

Evaluate and demonstrate IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combine candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications.

Accomplishments: Evaluated and demonstrated IM propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IM characteristics. Combined candidate IM propellants and case concepts to demonstrate compliance with IM and performance requirements.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.500	0.150	
RDT&E Articles Quantity				

Evaluate ordnance and container concepts. Model applications that reduce and enhance IM warhead design. Assess the operation utility of current and projected IM improvements to determine current state of IM and prioritize future funding for IM technology.

Accomplishments: Assessed operational utility of IM improvements and demonstrated feasibility of IM optimization of weapons storage.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	0363/Insensitive Munitions Advanced Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget:	0.000	3.108	3.633
FY07 President's Budget:	0.000	3.061	2.608
Total Adjustments	0.000	-0.047	-1.025

Summary of Adjustments:

General Provisions	-0.047	
Programmatic changes:		-1.000
Other misc. changes:		-0.025
Subtotal:	-0.047	-1.025

Schedule:

NOT APPLICABLE

Technical:

NOT APPLICABLE

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions	PROJECT NUMBER AND NAME 0363/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 NOSSA/Indian Head - Program Management NSWC Dahlgren - Ordnance and container concept development NSWC, Indian Head - High Explosive Development and Evaluation -Gun Propulsion Development and Evaluation		

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 21 of 23)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603609N/Conventional Munitions				0363/Insensitive Munitions Advanced Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Propulsion Dev. And Eval.	WX	NAWC WPN DIV/China Lake	86.517	0.000		0.508	11/05	0.434	11/06			0.000	87.459	NA
		NAWC WPN DIV/China Lake	10.250										10.250	
Explosives Dev. And Eval.	WX	NSWC/Indian Head Div.	69.925	0.000		0.600	11/05	0.424	11/06			0.000	70.949	NA
Ordnance Dev. And Eval.	WX	NSWC/Dahlgren Div.	19.421	0.000		0.500	11/05	0.150	11/06			0.000	20.071	NA
Pyrotechnic Dev. And Eval.	WX	NSWC/Crane Div.	6.570	0.000		0.000	11/05	0.000	11/06			0.000	6.570	NA
Gun Propulsion and Eval.	WX	NSWC/Indian Head Div.	0.000	0.000		0.346	11/05	0.600	11/06			0.000	0.946	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			192.683	0.000		1.954		1.608				0.000	196.245	NA
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 22 of 23)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603609N/Conventional Munitions				0363/Insensitive Munitions Advanced Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date				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	0.000	
Remarks:														
Contractor Engineering Support													0.000	
Program Management Support	WX	NSWC/INDIAN HEAD	29.926										29.926	
Program Management Support	WX	NOSSA	2.598	0.000		1.107	11/05	1.000	11/06			0.000	4.705	NA
Travel	WX	NOSSA											0.382	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			32.524	0.000		1.107		1.000				0.000	34.631	NA
Remarks:														
Total Cost			225.207	0.000		3.061		2.608		0.000		0.000	230.876	NA
Remarks:														

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY: RDT&E,N/BA-4 Advanced Component Dev. and Prototype				R-1 ITEM NOMENCLATURE 0603611M Marine Corps Assault Vehicles			
COST (\$in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
B0020 EXPEDITIONARY FIGHTING VEHICLE (EFV)	237.512	249.727	188.306	171.923	94.120	52.438	14.922
9999 Congressional Add	1.640						
Total	239.152	249.727	188.306	171.923	94.120	52.438	14.922
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
<p>B0020 The Expeditionary Fighting Vehicle (EFV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The EFV will provide the principal means of tactical surface mobility for the Marine Air Group Task Force (MAGTF) during both ship-to-objective maneuvers and sustained combat operations ashore as part of the Navy and Marine Corps concepts within the Expeditionary Maneuver Warfare capstone. The EFV will provide the Marine Corps with the capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations. The EFV replaces the AAV7A1 Vehicle, which was originally fielded in the early 1970s. The EFV is a self-deploying, high-water speed, amphibious, armored, tracked vehicle capable of operating in all weather as well as Nuclear, Biological, and Chemical (NBC) environments.</p> <p>The EFV program is a ACAT-1D program managed by the Marine Corps. The EFV is the next generation of Marine Corps Assault Vehicles being developed to satisfy the requirements of the 21st Century Marine War fighters. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the EFV will provide the Marine Corps with the tactical mobility assets required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone. Acquisition of the EFV is critical to the Marine Corps. The total EFV requirement is for 1,013 weapon systems. The EFV program remains the Marine Corps number one priority ground system acquisition.</p> <p>The program received approval to enter the Systems Development and Demonstration (SDD) Phase (formerly Engineering and Manufacturing Development) of the acquisition process during the Milestone II Defense Acquisition Board Readiness Meeting held on 26 November 2000. All program exit criteria were successfully met or exceeded. The SDD Phase (2001 through 2007) will include validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV.</p> <p>The Congressional Add is in project B9636 DISPLAY TECHNOLOGY PROGRAM for Integration & Testing of BETA smart display design efforts.</p>							

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EXHIBIT R-2a, RDT&E Project Justification

DATE: **FEBRUARY 2006**

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Advanced Component Dev. and Prototypes		PROGRAM ELEMENT NUMBER AND NAME 0603611M Marine Corps Assault Vehicles				PROJECT NUMBER AND NAME: B0020 Expeditionary Fighting Vehicle (EFV)				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
B0020 EXPEDITIONARY FIGHTING VEHICLE (EFV)		237.512	249.727	188.306	171.923	94.120	52.438	14.922	Cont	Cont
9999 CONGRESSIONAL ADD		1.640								
TOTAL		239.152	249.727	188.306	171.923	94.120	52.438	14.922	Cont	Cont

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

The Expeditionary Fighting Vehicle (EFV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The EFV will provide the principal means of tactical surface mobility for the Marine Air Group Task Force (MAGTF) during both ship-to-objective maneuvers and sustained combat operations ashore as part of the Navy and Marine Corps concepts within the Expeditionary Maneuver Warfare capstone. The EFV will provide the Marine Corps with the capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations. The EFV replaces the AAV7A1 Vehicle, which was originally fielded in the early 1970s. The EFV is a self-deploying, high-water speed, amphibious, armored, tracked vehicle capable of operating in all weather as well as Nuclear, Biological, and Chemical (NBC) environments.

The EFV program is a ACAT-1D program managed by the Marine Corps. The EFV is the next generation of Marine Corps Assault Vehicles being developed to satisfy the requirements of the 21st Century Marine War fighters. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the EFV will provide the Marine Corps with the tactical mobility assets required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone. Acquisition of the EFV is critical to the Marine Corps. The total EFV requirement is for 1,013 weapon systems. The EFV program remains the Marine Corps number one priority ground system acquisition.

The program received approval to enter the Systems Development and Demonstration (SDD) Phase (formerly Engineering and Manufacturing Development) of the acquisition process during the Milestone II Defense Acquisition Board Readiness Meeting held on 26 November 2000. All program exit criteria were successfully met or exceeded. The SDD Phase (2001 through 2007) will include validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST (\$ in Millions)	FY2005 *	FY2006	FY2007
Accomplishment/Effort Subtotal Cost	186.201	202.161	154.916
RDT&E Articles Qty			

(U) Fabrication of SDD phase prototypes. Design development. Developmental Testing. Survivability Program. SDD prototype shakedown testing. Regenerative Filtration Technology, FLIR Thermal Imager, MK46/FLIR Upgrade and Display Technology Program Congressional Adds.

FY05: Continue design development, manufacturing planning, and producibility design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Complete fabrication and delivery of SDD prototypes. Perform tasks for FLIR Thermal Imager, Regenerative Filtration Technology, and the MK 46 Weapons Systems/FLIR upgrade. Integration & Testing of BETA smart display design efforts.

* Note: Includes \$1.640 of Display Technology Program (Congressional Add, Project B9636).

FY06: Continue design development, manufacturing planning, and producibility design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Support Development Testing (DT) and Reliability/Availability/Maintainability (RAM) testing, support MS C Operational Assessment (OA); review and analyze OA results; process, design, and incorporate modifications identified. Procurement of test spares. Refurbishment of SDD vehicles. Development of Integrated Electronic Technical Manuals (IETMs).

FY07: Continue design development, manufacturing planning, and producibility design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Continue test support and design, integration and testing of MS C OA identified modifications. Continue development of Integrated Electronic Technical Manuals (IETMs).

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EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME:		
RDT&E, N /BA-4 Advanced Component Dev. and Prototypes	0603611M Marine Corps Assault Vehicles	B0020 Expeditionary Fighting Vehicle (EFV)		
COST (\$ in Millions)	FY2005	FY2006	FY2007	
Accomplishment/Effort Subtotal Cost	7.234	7.578	8.432	
RDT&E Articles Qty				
(U) Continue to provide in-house technical support.				
COST (\$ in Millions)	FY2005	FY2006	FY2007	
Accomplishment/Effort Subtotal Cost	7.413	6.090	6.545	
RDT&E Articles Qty				
(U) Continue to provide program support to coordinate and update program planning, program analysis, and program execution.				
COST (\$ in Millions)	FY2005	FY2006	FY2007	
Accomplishment/Effort Subtotal Cost	20.611	14.895	0.000	
RDT&E Articles Qty				
(U) Develop training courseware, devices and simulators.				
FY05: Continue development of EFV training devices/simulators. Continue development of EFV training courseware.				
FY06: Complete development of EFV training devices/simulators and EFV training courseware.				
COST (\$ in Millions)	FY2005	FY2006	FY2007	
Accomplishment/Effort Subtotal Cost	17.693	19.003	18.413	
RDT&E Articles Qty				
(U) Ballistic Testing. DT/OT. RAM-D Testing. EOA				
FY05: Conduct Component Ballistic Testing. Continue DT of SDD prototypes. Complete Lethality Testing of MK-46 weapon station.				
FY06: Conduct P Variant Controlled Damaged Testing. Continue DT of SDD prototypes. Conduct Operational Testing.				
FY07: Conduct C Variant Controlled Damaged Testing. Continue DT of SDD prototypes. Conduct Operational Testing. Conduct full up system Level Live Fire Testing.				
	FY2005	FY2006	FY2007	
(U) Total \$	239.152	249.727	188.306	

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EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006							
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME:							
RDT&E, N /BA-4 Advanced Component Dev. and Prototypes	0603611M Marine Corps Assault Vehicles	B0020 Expeditionary Fighting Vehicle (EFV)							
(U) PROJECT CHANGE SUMMARY:									
	FY 2005	FY 2006	FY 2007						
(U) FY 2006 President's Budget:	243.058	253.675	187.456						
(U) Adjustments from the President's Budget:									
(U) Congressional Program Adjustments	-0.186	-2.652							
(U) SBIR/STTR Transfer	-5.360								
(U) Display Technology Congressional Add	1.640								
(U) Sec. 8026(f) FFRDC		-0.141							
(U) Sec. 8125 Revised Economic Assumption		-1.155							
(U) Inflation			0.833						
(U) CIVPERS Pay Raise Adj			0.017						
(U) FY 2007 President's Budget:	239.152	249.727	188.306						
CHANGE SUMMARY EXPLANATION:									
(U) Funding:	FY 2005 net decrease of \$3.906M reflects decreases of \$5.360M for SBIR and \$.186M for Congressional Reductions (Dept of Energy) and an increase of \$1.640 for Display Technology .								
	FY 2006 net decrease of \$3.948M reflects decreases of \$2.652M for Congressional Reductions, \$0.141 for FFRDC and \$1.155 for Revised Economic Assumptions								
	FY 2007 net increase of \$0.850 reflects \$0.833 for Inflation and \$0.017 for Pay Raise Adjustments								
(U) Schedule:	Not Applicable								
(U) Technical:	Not Applicable								
(U) C. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	FY2005	FY2006	FY2007	FY2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
(U) PANMC, BLI #147500, EFV	2.462	5.662	9.524	28.789	26.278	15.581	15.957	550.206	654.459
(U) PMC BA2, BLI #202200, EFV	52.457	28.747	256.204	268.444	411.766	626.815	1,073.949	6,932.000	9,764.067
(U) PMC BA7 (Spares), BLI (NA), EFV	-	0.000	9.708	8.456	12.404	17.359	43.150	378.717	470.295
(U) PMC, EFV Totals	52.457	28.747	265.912	276.900	424.170	644.174	1,117.099	7,310.717	10,234.362
(U) MILCON P-041	-	-	2.320	-	-	-	-		2.320
(U) MILCON P-042	-	-	-	22.737	-	-	-		22.737
(U) MILCON P-417	-	-	-	-	3.016	-	-		3.016
(U) REMAINING EFV MCON	-	-	-	-	-	-	-	41.428	41.428
(U) MILCON, EFV Totals	0.000	0.000	2.320	22.737	3.016	0.000	0.000	41.428	69.501
(U) Related RDT&E:									
(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project C0021, AAV7A1.									
(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project B2237, AVTB.									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Advanced Component Dev. and Prototypes	PROGRAM ELEMENT NUMBER AND NAME 0603611M Marine Corps Assault Vehicles	PROJECT NUMBER AND NAME: B0020 Expeditionary Fighting Vehicle (EFV)
<p>(U) D. ACQUISITION STRATEGY:</p> <p>The EFV Program acquisition strategy includes the extensive use of test assets, models, simulation, and advanced technology research to optimize vehicle design, reduce Total Ownership Cost (TOC), and control vehicle unit cost. Three fully functional PDRR prototypes were developed and have undergone extensive developmental testing to further vehicle maturity. During the SDD phase of the program, nine prototype vehicles will be manufactured and tested extensively in developmental and operational tests. A tenth vehicle will be manufactured for use during Full Up System Level Lethality testing planned to begin in FY07. Following the LRIP decision review, LRIP vehicles will be delivered in FY08 and FY09 for use during Initial Operational Test and Evaluation (IOT&E). Initial Operational Capability (IOC) and Full Operational Capability (FOC) will occur in FY10 and FY20, respectively.</p> <p>The EFV management strategy is event driven, designed to ensure a logical progression through the EFV acquisition to reduce risk, ensure affordability, and provide adequate information to decision makers regarding acquisition progress. The EFV Program team is a partnership of government and industry experts, committed to developing the most versatile combat vehicle, providing the optimum balance of combat effectiveness, affordability, innovation, and technology. The program Integrated Product Teams (IPTs), composed of contractors, sub-contractors, Marines, and government civilians, are the foundation of the EFV acquisition management process. The government, prime contractor, and major subcontractors are co-located in a highly integrated communication environment that facilitates proactive decision-making processes and flexible execution of plans to support these teams and product development.</p> <p>Cost as an independent variable (CAIV) has been institutionalized throughout the program and as such is an integral consideration in all trade studies and decisions. The program has had a highly integrated and extensive test approach since its inception which has included a very strong engineering-model and prototype testing program supported by extensive modeling and simulation techniques which is intended to continue throughout SDD. As a Program Management Oversight for Life Cycle Support pilot program, the program office management strategy includes planning for life cycle support once the system is fielded to more efficiently manage and optimize operating and support requirements and reduce overall program cost.</p> <p>The program's contracting approach for the EFV is to award the vast majority of the work to one prime contractor, competitively selected in 1996. GDLS operating through its division General Dynamics Amphibious System will be responsible for designing and producing the vehicle and providing support for testing from PDRR through LRIP. Contracts for Government Furnished Property will be kept to a minimum and will include only property which could not otherwise be available to the contractor. Local Area Network support contract is currently provided by an 8(a) firm. Contract support for programmatic and technical support was competitively awarded in September 2003 as a cost plus fixed-fee contract and will continue through FY08. The Life Cycle Support Contract is scheduled for award during FY08 for a portion of the initial operations and maintenance support for the fielded EFVs.</p> <p>(U) E. MAJOR PERFORMERS: FY 03-07 - General Dynamics, Woodbridge, VA. Validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing Life Cycle Management. Awarded Feb 01.</p>		

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CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: FEBRUARY 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME						
RDT&E, N /BA-4 Advanced Component Development and Prototypes			0603611M Marine Corps Assault Vehicles					B0020 Expeditionary Fighting Vehicle (EFV)						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
PDRR Contract	CPAF	GDLS - PDRR Award	399.703									Cont	Cont	399.703
SDD Contract	CPAF	GDLS - SDD Award	680.116	177.899	1/	197.626	1/	151.466	1/			Cont	Cont	1,207.107
Regenerative Filtration	CPAF	Army, Edgewood Chem/Bio Ctr		3.327	2Q									3.327
Survivability Contract	Unknown	NSMA, Arlington, VA	15.132	3.335	2Q	4.535	1Q	3.450	1Q					26.452
Display Technology	TBD	TBD		1.640	2Q FY06									
Subtotal Program Dev Spt			1,094.951	186.201		202.161		154.916				Cont	Cont	
Remarks:														
1/ The SDD contract is for the entire SDD effort and is incrementally funded.														
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Program Support		EG&G, Manassas, VA	23.256									Cont	Cont	24.000
Program Support	CPFF	EG&G, Manassas, VA	4.173	4.212	1Q	4.296	1-2Q	4.382	1-2Q			Cont	Cont	17.063
Program Support		Various Government Contracts	17.602	3.201	2/	1.794	2/	2.163	2/			Cont	Cont	
Training devices/simulators	CPAF	GDLS	11.070	20.611	2Q	14.895	2Q	0.000				Cont	Cont	46.717
Subtotal Program Support			56.101	28.024		20.985		6.545				Cont	Cont	
2/ Various contract award dates.														
0														
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Testing	N/A	Various Locations	39.946	17.693	3/	19.003	3/	18.413	3/			Cont	Cont	
Subtotal T&E			39.946	17.693		19.003		18.413				Cont	Cont	
Remarks:														
3/ Various contract award dates.														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: FEBRUARY 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME						
RDT&E, N /BA-4 Advanced Component Development and Prototypes			0603611M Marine Corps Assault Vehicles					B0020 Expeditionary Fighting Vehicle (EFV)						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
In-house technical support		Various Government Labs	77.608	5.198	4/	5.570	4/	6.202	4/			Cont	Cont	
Mgmt & Prof Support		MITRE CORP, McClean, VA	11.526	2.036	1Q	2.008	1Q	2.230	1Q			Cont	Cont	
Subtotal Management			89.134	7.234		7.578		8.432				Cont	Cont	
Remarks:														
4/ Various contract award dates.														
Total Cost			1,280.132	239.152		249.727		188.306				Cont	Cont	

Exhibit R-4/4a Schedule Profile/Detail							DATE: FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Advanced Component Development and Prototypes		0603611M Marine Corps Assault Vehicles			B0020 Expeditionary Fighting Vehicle (EFV)					
SCHEDULE DETAIL		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
MS C				4Q						
FRP Decision								4Q		
IOC								4Q		
PDRR Prototype Testing		1-2Q								
Operational Assessments				2-4Q	2Q					
Fabrication of 9 Prototypes		1-4Q	1-3Q							
Fabricate Live Fire Test Vehicle		1-4Q	1-2Q							
Developmental II & RAM-D Testing		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-2Q		
CDR				2Q						
LRIP Contract Award					1Q					
Full Up System Level Live Fire Test					3-4Q	1-4Q	1-2Q			
LRIP Deliveries Lot 1						3-4Q	1-3Q			
IOT&E							3-4Q	1-2Q		
Ready for Training								2Q		
LRIP Deliveries Lots II & III & IV							3-4Q	1-4Q	1-4Q	
Full Rate Contract Award									1Q	

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME			
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	0603612M Marine Corps Mine/Countermeasures Systems			C2106 Advance Mine Detector			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	5.827	3.216	3.777	0.653	0.000	0.000	0.000
RDT&E Articles Qty							
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
The Advance Mine Detector (AMD) will be a man-portable system capable of detecting both metallic and nonmetallic buried mines regardless of fuse type. The AMD will alleviate a critical deficiency for detection of buried metallic and semi-metallic mines. Current mine detection technologies are only able to detect metallic mines. The Family of Explosive Ordnance Disposal (FEOD) mission is to provide a capability to neutralize the hazards associated with explosive ordnance that are beyond the normal capabilities of other specialties and present a threat to operations, installations, personnel and material. The FEOD Equipment accomplishes this mission by detecting, identifying, rendering safe, recovering, evacuating and disassembling, and/or disposing of unexploded ordnance with a variety of tools.							
(U) ACCOMPLISHMENTS/PLANNED PROGRAM:							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		1.136	0.500	0.500			
RDT&E Articles Qty							
AMD: Facilitate program transition to Marine Corps Systems Command (MARCORSYSCOM) from Office of Naval Research (ONR). Provide program management, technical support, and travel.							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		1.000	1.700	2.716			
RDT&E Articles Qty							
AMD: Conduct initial developmental testing and follow-up developmental testing and operational testing in various soil types and environmental conditions of the AMD prototype to determine system capabilities.							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		0.706	0.585	0.561			
RDT&E Articles Qty							
AMD: Update programmatic documentation and technical drawings. Development of technical manuals and training packages.							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		0.520	0.431	0.000			
RDT&E Articles Qty							
AMD: Conduct Trade Studies to reduce power consumption/weight, improve detection depths, and sweep rate. Engineering and design studies to improve ergonomic characteristics, integrate human factors and finalize overall system design.							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		0.410	0.000	0.000			
RDT&E Articles Qty							
ICE: Conduct testing of Hard to Kill Cards (H2K) for the IED Countermeasures Equipment (ICE) system.							
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007			
Accomplishment/Effort Subtotal Cost		2.055	0.000	0.000			
RDT&E Articles Qty							
OPAL (TSWG): Reimburse the Joint Command Technical Support Workin Group (TSWG) for the purchase of OPAL Thermal Imagers.							
(U)Total \$		5.827	3.216	3.777			

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	0603612M Marine Corps Mine/Countermeasures Systems			C2106 Advance Mine Detector					
PROJECT CHANGE SUMMARY:	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>						
(U) FY 2006 President's Budget:	4.478	3.265	3.760						
(U) Adjustments from the President's Budget:									
(U) Congressional/OSD Program Reductions									
(U) Congressional Rescissions									
(U) Congressional Increases									
(U) Reprogrammings	1.055								
(U) SBIR/STTR Transfer	-0.114								
(U) Minor Affordability Adjustment	0.408	-0.049	0.017						
(U) FY 2007 President's Budget:	5.827	3.216	3.777						
CHANGE SUMMARY EXPLANATION:									
(U) Funding: See above.									
(U) Schedule: Not Applicable.									
(U) Technical: Not Applicable.									
(U) C. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Compl</u>	<u>Total Cost</u>
PMC BLI 632500 Demo Support Sys Advanced Mine Detector	3.302	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.302
PMC BLI 652000 EOD Sys Advanced Mine Detector	0.000	1.039	2.449	2.609	1.068	0.000	0.000	0.000	7.165
(U) Related RDT&E: Not Applicable.									
(U) D. ACQUISITION STRATEGY: By leveraging an exploratory technology program for mine detection, the Marine Corps will maintain active involvement in the Advanced Mine Detector (AMD) development during concept and technology development. A backpack prototype, configured to detect Trinitrotoluene (TNT), Hexahydro-Trinitro-Triazine (RDX), tetryl and metallic and semi-metallic mines, will be delivered 2nd quarter FY 05 for test and evaluation. The demonstrated technology will then transition into system development and demonstration phase for further development. A cost plus contract with negotiated contractor incentives in the areas of weight, sweep rate, and power consumption will be awarded. After completion of Milestone B, the program enters Low Rate Initial Production (LRIP). LRIP items will undergo Initial Operational Test and Evaluation in preparation for full rate production. The production phase will employ a fixed price production contract.									
(U) SCHEDULE PROFILE: Not Applicable.									
(U) E. MAJOR PERFORMERS:									
FY04 - Aberdeen Test Center, Aberdeen, MD, Test Activity									
FY05 - Aberdeen Test Center, Aberdeen, MD, Test Activity									
FY06 - Anniston Army Depot, Anniston Alabama/ Aberdeen Test Center, Aberdeen, MD, Test Activity/MCAS, Yuma Arizona									
FY07 - Aberdeen Test Center, Aberdeen, MD, Test Activity									

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Exhibit R-3 Cost Analysis				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME				
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)				0603612M Marine Corps Mine/Counterme				C2106 Advance Mine Detector				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Engineering & Design	MIPR	CECOM Alexandria, VA	0.000	1.132	2Q/05	0.434	1Q/06			Cont	Cont	
Systems Engineering	MIPR	CECOM Alexandria, VA	0.000	0.505	3Q/05	0.231	3Q/06	0.194	2Q/06	Cont	Cont	
Subtotal Product Dev			0.000	1.637		0.665		0.194		Cont	Cont	
Remarks:												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Engineering Spt	RCP	MCSC Quantico, VA	0.403	0.518	1Q/05	0.351	1Q/06	0.367	1Q/06	Cont	Cont	
Engineering Spt	MIPR	CECOM Alexandria, VA	0.283								0.283	0.283
Engineering Spt	MIPR	CECOM Alexandria, VA	0.042								0.042	0.042
Engineering Spt	RCP	MCSC Quantico, VA	0.036								0.036	0.036
Engineering Spt (FEOD)	RCP	MCSC Quantico, VA	0.025								0.025	0.025
Engineering Spt	RCP	MCSC Quantico, VA	0.000	2.056	2Q/05							
Subtotal Support			0.789	2.574		0.351		0.367		Cont	Cont	
Remarks:												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Testing	MIPR	Aberdeen Prvg Grnd, MD	0.446	0.800	1Q/05	0.700	1Q/06	1.600	1Q/07	Cont	Cont	
Testing	MIPR	MCAS Yuma, AZ	0.000	0.000		1.000	2Q/06	1.116	2Q/07	Cont	Cont	
Testing	MIPR	Army Research Lab	0.000	0.410	2Q/05							
Subtotal T&E			0.446	1.210		1.700		2.716		Cont	Cont	
Remarks:												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Management Spt	RCP	BAE, Stafford, VA	0.000	0.406	1Q/05	0.500	1Q/06	0.500	2Q/06	Cont	Cont	
Subtotal Management			0.000	0.406		0.500		0.500		Cont	Cont	
Remarks:												
Total Cost			1.235	5.827		3.216		3.777		Cont	Cont	

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EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY
RDT&E, N /BA-4 Demonstration/Validation

PROGRAM ELEMENT (PE) NAME AND NO.
0603635M Marine Corps Ground Combat/Supporting Arms Systems

COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	28.624	13.293	0.503	0.510	0.511	0.516	0.516
C1964 Anti-Armor Weapon System	11.091	0.0	0.0	0.0	0.0	0.0	0.0
C2507 Family of Small Craft	0.001	0.0	0.0	0.0	0.0	0.0	0.0
*C2508 Internally Transportable Vehicle (ITV)	13.415	0.0	0.0	0.0	0.0	0.0	0.0
C2614 SMAW Follow-On	0.0	0.493	0.503	0.510	0.511	0.516	0.516
*C3130 Lightweight Prime Mover	2.285	0.0	0.0	0.0	0.0	0.0	0.0
C9116 Nanoparticles Neutralization of Facility Threats	1.832	0.0	0.0	0.0	0.0	0.0	0.0
C9999 FY-06 Congressional Adds	0.0	12.800	0.0	0.0	0.0	0.0	0.0
Quantity of RDT&E Articles							

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

This PE supports the demonstration and validation of Marine Corps Ground/Supporting Arms Systems for utilization in Marine Air-Ground Expeditionary Force amphibious operations.

This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental test related to specific ground weapon system.

Note:

Currently in FY05 \$5.183M is on the FY2005 Omnibus reprogramming (FY05-38PA)

*C2508 \$4.535 of FY05 funds available to forward finance FY06

*C3130 \$2.285 of FY05 funds available to forward finance FY06.

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EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY
RDT&E, N /BA-4 Demonstration/Validation

PROGRAM ELEMENT (PE) NAME AND NO.
0603635M Marine Corps Ground Combat/Supporting Arms Systems

B. PROGRAM CHANGE SUMMARY

	FY2005	FY2006	FY2007
(U) FY 2006 President's Budget:	30.414	0.500	0.736
(U) Adjustments from the President's Budget:			
(U) Congressional/OSD Program Reductions			
(U) Congressional Rescissions			
(U) Congressional Increases		12.800	
(U) PR 07 Core Adjustment			
(U) Reprogrammings	-1.248		
(U) SBIR/STTR Transfer	-0.523		
(U) Minor Affordability Adjustment	-0.019	-0.007	-0.233
(U) FY 2007 President's Budget:	28.624	13.293	0.503

CHANGE SUMMARY EXPLANATION:

- (U) Funding: See Above.
- (U) Schedule: N/A
- (U) Technical: N/A

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDT&E, N/BA-4 Demonstration and Validation	0603635M Marine Corps Ground Combat/Spt Sys			C9999 FY06 Congressional Adds				
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	
Project Cost	0.000	12.800	0.000	0.000	0.000	0.000	0.000	
RDT&E Articles Qty								
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:								
COST (\$ in Millions)	FY 2005	FY06	FY07					
Accomplishment/Effort Subtotal Cost	0.000	4.200	0.000					
RDT&E Articles Qty								
Anti-Sniper Infrared Target System 9873N:								
COST (\$ in Millions)	FY 2005	FY06	FY07					
Accomplishment/Effort Subtotal Cost	0.000	1.400	0.000					
RDT&E Articles Qty								
Marine Exped Rifle Squad 9874N:								
COST (\$ in Millions)	FY 2005	FY06	FY07					
Accomplishment/Effort Subtotal Cost	0.000	1.300	0.000					
RDT&E Articles Qty								
Modeling & Simulation Warhead Interact 9875N: Conduct analytical simulation and modeling in conjunction with testing of specific warhead-to-target interactions in support of the Shoulder-launched Multipurpose Assault Weapon (SMAW) Tri-Mode Smart Fuze development that will be effective against a wider target set than the current SMAW dual mode Mk 420 fuze.								
COST (\$ in Millions)	FY 2005	FY06	FY07					
Accomplishment/Effort Subtotal Cost	0.000	1.100	0.000					
RDT&E Articles Qty								
Neutralize Fac Threat w/Novel Tech 9876N:								
COST (\$ in Millions)	FY 2005	FY2006	FY2007					
Accomplishment/Effort Subtotal Cost	0.000	3.800	0.000					
RDT&E Articles Qty								
Urban Operating Environment Lab 1964C:								
COST (\$ in Millions)	FY 2005	FY2006	FY2007					
Accomplishment/Effort Subtotal Cost	0.000	1.000	0.000					
RDT&E Articles Qty								
Urban Terrain Target Designator 9877N:								
(U) Total \$	0.000	12.800	0.000					

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603654N/Joint Service EOD Development					
COST (\$ in Millions)	Prior Years Cost		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Program
Total PE Cost			25.511	33.898	24.467	25.832	24.881	20.201	20.706	Continuing	Continuing
0377/Joint Service EOD Systems			11.622*	23.273	15.612	17.690	17.506	13.364	13.737	Continuing	Continuing
1317/EOD Diving System			2.431	2.262	2.700	2.753	2.745	2.798	2.853	Continuing	Continuing
4023/VSW MCM/ Force Protection UUV			9.681**	8.363	6.155	5.389	4.630	4.039	4.116	Continuing	Continuing
4024/SMCM Shallow and Deep Water UUV			1.777	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles			Various	Various	Various	Various	Various	Various	Various		0
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: * Includes \$4.450M IED Defeat Supplemental funding for Convoy Planning Tool (\$3.850M) and Disposable Firing System (\$.600M). ** Includes a \$3.4M Congressional Add for Magneto-Inductive Technology</p> <p>This is a Joint Service Program. This program provides for the development of Explosive Ordnance Disposal tools and equipment for use by all military services. The responsibility is assigned to the Navy as single service manager, by Department of Defense Directive 5160.62 of 26 April 1989, for management of the Joint Service Explosive Ordnance Disposal Research and Development Program. Proliferation of sophisticated types of foreign and domestic ordnance and Improvised Explosive Devices necessitate a continuing development program to provide Explosive Ordnance Disposal personnel of all military services with the special equipment and tools required to support this mission. This program also provides life support related equipment necessary to support the performance of Navy Explosive Ordnance Disposal tasks underwater. This equipment must have inherently low acoustic and magnetic signatures in order to allow the Explosive Ordnance Disposal technician to safely approach, render-safe and dispose of sea mines and other underwater ordnance.</p>											

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		11.622	23.273	15.612	17.690	17.506	13.364	13.737
RDT&E Articles Qty		Various	Various	Various	Various	Various	Various	Various

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides Explosive Ordnance Disposal personnel of all military services with the specialized equipment and tools required to support their mission of detection/location, identification, render-safe, recovery, field and laboratory evaluation, and disposal of unexploded ordnance (UXO) that is a threat to military operations, installations, personnel, or material. UXO includes foreign and domestic, both conventional and non-conventional, including improvised explosive devices (IEDs).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		5.035	8.287	7.780
RDT&E Articles Quantity		Various	Various	Various

Develop EOD detection, identification and knowledge systems to include the EOD Decision Support System (EOD DSS) (formerly the Joint EOD Knowledge Technology Operational Demonstration Advanced Concept Technology Demonstration (JEOD-KTOD ACTD) project), and Convoy Planning Tool. Also, conduct Analysis of Alternatives studies and conduct evaluations of Commercial/Non-Developmental Items (C/NDI EOD tools/equipment).

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		3.752	3.324	4.601
RDT&E Articles Quantity		Various	Various	Various

Develop access, disruption and neutralization systems to include, the Large IED Access and Disruption project, the Submunition Clearance project, the Joint Laser Ordnance Neutralization System (JLONS), and the Disposable Firing System. Conduct Analysis of Alternatives study for the Low Order Tools project. Also, conduct Analysis of Alternatives studies and conduct evaluations of Commercial/Non-Developmental Item (C/NDI) EOD tools/equipment.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.535	0.594	0.578
RDT&E Articles Quantity		Various	Various	Various

Develop remote systems to include the EOD Man Portable Robotics Program (MPRS) project.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.300	11.068	2.653
RDT&E Articles Quantity		Various	Various	Various

Classified Project III (A & B) and Joint Service Improvised Explosive Device Countermeasures project.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity		Various	Various	Various

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity		Various	Various	Various

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems	
(U) C. PROGRAM CHANGE SUMMARY:			
(U) Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 06 Pres Controls):	7.269	23.631	19.386
Current BES/President's Budget (FY07 Pres Controls):	11.622	23.273	15.612
Total Adjustments	4.353	-0.358	-3.774
Summary of Adjustments			
Programmatic Changes	4.450	0.000	-3.725
Other general provisions	-0.097	-0.358	-0.049
Subtotal	4.353	-0.358	-3.774
(U) Schedule:			
<p>The production decision for the Submunitions Clearance project has moved from 2Q FY05 to 4Q FY05, reflecting additional T&E required to ensure additional requirements for electromagnetic compatibility are met. The Milestone B for Joint Laser Ordnance Neutralization System (JLONS) moved from 3Q FY05 to 4Q FY05 due to delays in achieving consensus among the Services and review of the joint Capabilities Development Document (CDD). Also, as the requirements have been identified and are greater than previously expected, the RDT&E phase is expected to take more time, so the Milestone C is moved from 4Q FY08 to 2Q FY10. The AOA conducted for Classified III identified two unique requirements, now identified as Classified III A and Classified III B. Classified III A is an AAP, and Classified III B will be an ACAT program, and urgency and technology availability will permit a Milestone C for Classified III B to occur earlier (moved from 2Q FY10 to 3Q FY08.) An accelerated AOA will be conducted for the JS IED ECM project, resulting in an earlier project initiation. Technology required for the Advanced Ordnance Locator (AOL) has not matured as quickly as expected, therefore the project initiation date has now been set for 3Q FY09 based upon technology forecasts. The joint requirements for the Decision Support System (DSS) have been established by the users from all four Services, the resulting CDD captures the necessary development cycle, and the schedule has been revised to reflect these requirements. The Non-Invasive Filler Identification (NFI) project was cancelled due to the immaturity of technology suitable in EOD operational environments.</p>			
(U) Technical:			

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN 5509 (Funds listed in section D. are only for cost code VN075, EOD Equipment/Systems.)	1574	12496	13291						

(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

(U) F. MAJOR PERFORMERS: **

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD in FY05 through FY07. The funding is used for development of Joint Service EOD tools/equipment. The funding document will be issued as follows: FY05-10/04; FY06-10/05; FY07-10/06.

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

** Required for DON and OSD submit only.

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603654N/Joint Service EOD Development			0377/Joint Service EOD Systems								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTD, IH, MD	81.825			2.992	10/04	10.310	10/05	4.895	10/06	Continuing	Continuing	
Software Development	WR	EODTD, IH, MD	3.679			2.200	10/04	5.400	10/05	4.455	10/06	Continuing	Continuing	
ILS	WR	EODTD, IH, MD	37.670			1.400	10/04	0.850	10/05	0.750	10/06	Continuing	Continuing	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			123.174			6.592		16.560		10.100		0.000	156.426	
Remarks:														
Program Management Support	C/CPFF	EDO, Alexandria, VA	3.460										3.460	
Program Management Support	C/CPFF	EDO, Alexandria, VA	0.345			0.300	10/04	0.600	10/05	0.600	10/06	0.000	1.845	
												Continuing	Continuing	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Support			3.805			0.300		0.600		0.600		0.000	5.305	
Remarks:														

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603654N/Joint Service EOD Developme				0377/Joint Service EOD Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	EODTD, IH, MD	58.147			3.000	10/04	2.200	10/05	1.400	10/06	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	EODTD, IH, MD	8.245							0.538	10/06	Continuing	Continuing	N/A
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal T&E			66.392			3.000		2.200		1.938		0.000	73.530	
Remarks:														
Program Management Support	WR	EODTD, IH, MD	4.520			0.751	10/04	0.600	10/05	0.625	10/06	Continuing	Continuing	N/A
Miscellaneous	Various	Various	4.690			0.979	10/04	3.313	10/05	2.349	10/06	Continuing	Continuing	N/A
													0.000	
													0.000	
													0.000	
Subtotal Management			9.210			1.730		3.913		2.974		Continuing	Continuing	
Remarks:														
Total Cost			202.581			11.622		23.273		15.612		Continuing	Continuing	
Remarks:														

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification			DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND JT Service EOD Dev 0603654N	PROJECT NAME AND NUMBER JT Service EOD Systems/0377			

0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems

RDT&E Milestone Chart

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011							
	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				
EOD MAN PORTABLE ROBOTIC SYSTEM																																
Testing (Final)				■																												
Production Decision				▲																												
Production				■	■	■	■	■	■	■	■	■																				
Block Upgrade (DEV)				■	■	■	■	■	■	■	■	■																				
Block Upgrade (PROD)									■	■	■	■	■	■	■	■																

CLASSIFICATION:

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EXHIBIT R-4, RDT&E Project Justification																DATE:												
APPROPRIATION/BUDGET ACTIVITY																PROGRAM ELEMENT NAME AND				PROJECT NAME AND NUMBER								
RDT&E, N/BA-4																JT Service EOD Dev 0603654N				JT Service EOD Systems/0377								
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																												
RDT&E Milestone Chart																												
FY 2005					FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
SUBMUNITIONS CLEARANCE																												
Testing (Final)				■																								
Production Decision				▲																								
Production				■	■	■	■	■	■	■	■	■	■	■	■	■												
JLONS																												
Milestone B				▲																								
System Development and Demonstration				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Milestone C																												
Production and Deployment																									■	■	■	■
Block Improvements (DEV)																												

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CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification																DATE: February 2006																			
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER								PROJECT NAME AND NUMBER																							
RDT&E, N/BA-4				JT Service EOD Dev 0603654N								JT Service EOD Systems/0377																							
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																																			
RDT&E Milestone Chart																																			
				FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011							
				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				
EOD DECISION SUPPORT SYSTEM																																			
								▲																											
Milestone B																																			
Development Phase																																			
Milestone C												▲																							
Production																																			
Increment I (DEV)																																			
Increment I (PROD)																																			
Increment II (DEV)																																			
Increment II (PROD)																																			
Increment III (DEV)																																			

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CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification																				DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4					PROGRAM ELEMENT NAME AND NUMBER JT Service EOD Dev 0603654N										PROJECT NAME AND NUMBER JT Service EOD Systems/0377																	
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																																
RDT&E Milestone Chart																																
					FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
					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
ADVANCED ORDNANCE LOCATOR																																
Program Initiation																																
Development																																
Testing																																

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification																	DATE: February 2006														
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER								PROJECT NAME AND NUMBER																			
RDT&E, N/BA-4				JT Service EOD Dev 0603654N								JT Service EOD Systems/0377																			
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																															
RDT&E Milestone Chart																															
				FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
				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
JOINT SERVICE IED CM																															
Analysis of Alternatives (AOA)				■																											
Milestone B								▲																							
System Development and Demonstration (LAND)								■				■																			
Testing (LAND)												■																			
Milestone C (LAND)																▲															
System Development and Development (VEHICLE)								■				■																			
Testing (VEHICLE)												■																			
Milestone C																▲															

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CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-4, RDT&E Project Justification																DATE:											
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4				PROGRAM ELEMENT NAME AND JT Service EOD Dev 0603654N				PROJECT NAME AND NUMBER JT Service EOD Systems/0377																			
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																											
RDT&E Milestone Chart																											
FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
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
CLASSIFIED III A																											
Program Initiation																											
Testing (Preliminary)																											
Interim Progress Review																											
EDM Fabrication																											
Final Testing																											
Production Decision																											
Production and Deployment																											
CLASSIFIED III B																											
Milestone B																											
EDM Fabrication																											
Final Testing																											
Milestone C																											
Production and Deployment (B)																											

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/ BA-4	PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems				
CLASSIFIED PROJECT II		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Production Decision		1Q						
Production/Deliveries			1Q-4Q	1Q-4Q	1Q-4Q			
LARGE IED ACCESS & DISRUPTION								
Testing (DEV)		1Q						
Production Decision (DEV)		3Q						
Production		1Q-4Q	1Q-4Q	1Q-3Q				
EOD MAN PORTABLE ROBOTIC SYSTEM								
Testing (Final)		1Q						
Production Decision		3Q						
Production		2Q-4Q	1Q-4Q	1Q-2Q				
Block Upgrade (DEV)		4Q	1Q-4Q	1Q-2Q				
Block Upgrade (PROD)			4Q	1Q-4Q	1Q-2Q			

R-1 SHOPPING LIST - Item No. 59

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/ BA-4	PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems				
ADVANCED ORDNANCE LOCATOR	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Program Initiation					3Q			
Development					3Q-4Q	1Q-4Q	1Q-3Q	
Testing							4Q	
JOINT SERVICE IED CM								
Analysis of Alternatives (AOA) Study		1Q						
Milestone B		3Q						
System Development and Demonstration (LAND)		3Q-4Q	1Q-4Q	1Q-2Q				
Testing (LAND)			4Q	1Q				
Milestone C (LAND)				3Q				
System Development and Demonstration (VEHICLE)		3Q-4Q	1Q-4Q	1Q-2Q				
Testing (VEHICLE)				1Q-2Q				
Milestone C (VEHICLE)				3Q				
CLASSIFIED III A								
Program Initiation	1Q							
Testing (Preliminary)	3Q-4Q	1Q-2Q						
Interim Progress Review		3Q						
EDM Fabrication		3Q-4Q	1Q-2Q					
Final Testing			2Q-3Q					
Production Decision			3Q					
Production and Deployment			3Q-4Q	1Q-4Q	1Q-2Q			
CLASSIFIED III B								
Milestone B		2Q						
EDM Fabrication		3Q-4Q	1Q-2Q					
Final Testing			3Q-4Q	1Q				
Milestone C				3Q				
Production and Deployment				4Q	1Q-4Q	1Q-2Q		

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 1317/EOD Diving Systems			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		2.431	2.262	2.700	2.753	2.745	2.798	2.853
RDT&E Articles Qty		Various	Various	Various	Various	Various	Various	Various

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides for development of diving equipment and explosive charges to support Explosive Ordnance Disposal (EOD) underwater operations. The equipment must have inherently low acoustic and magnetic signatures in order to allow the EOD technician to safely approach, render-safe, and dispose of sea mines and other underwater ordnance.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 1317/EOD Diving Systems

(U) B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.680	0.360	0.561
RDT&E Articles Quantity		Various	Various	Various

Test and gain Approval for Navy Use (ANU) of EOD diving. Commercial/Non-Developmental Items (C/NDI). Develop and Validate Underwater Breathing Apparatus (UBA) decompression diving tables.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.196	0.500	0.350
RDT&E Articles Quantity		Various	Various	Various

Development of Advanced Underwater Limpet Mine equipment to enhance EOD units' ability to detect, neutralize, and gather intelligence on underwater limpet and special attached mines. Develop a Diver Amphibious Neutralization System (DANS) for below and above water neutralization of mines to support EOD & NSCT-1 Neutralization missions.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.250	0.250
RDT&E Articles Quantity		Various	Various	Various

Develop technology refresh improvements to the Underwater Imaging System (UIS), and Acoustic Firing System (AFS).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 1317/EOD Diving Systems

(U) B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.555	1.152	1.539
RDT&E Articles Quantity		Various	Various	Various

Develop a New Underwater Breathing Apparatus (NUBA) (formally known as Advanced Underwater Breathing Apparatus (UBA)) to improve underwater breathing capabilities. Develop a Diver Hull Inspection Navigation System to improve current capabilities in existing hull search operations.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity		Various	Various	Various

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	0.000	0.000
RDT&E Articles Quantity		Various	Various	Various

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	1317/EOD Diving Systems

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY06 Pres Controls)	2.400	2.296	2.764
Current BES/President's Budget (FY07 Pres Controls)	<u>2.431</u>	<u>2.262</u>	<u>2.700</u>
Total Adjustments	0.031	-0.034	-0.064
Summary of Adjustments			
Programmatic Changes			-0.064
Other General Provisions	<u>0.031</u>	<u>-0.034</u>	
Subtotal	0.031	-0.034	-0.064

(U) Schedule:

Limpet Mine Neutralization production decision moved from FY05 3rd QTR to 4th QTR FY05 to accommodate additional effectiveness testing.

(U) Technical:

Not applicable

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 1317/EOD Diving Systems
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN 0975	3309	6306	4583						
PANMC 0340			1896						

(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

(U) F. MAJOR PERFORMERS: **

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD in FY05 through FY07. The funding is used for development of Underwater EOD tools/equipment. The funding document will be issued as follows: FY06- 10/05, FY07-10/06, FY08-10/07.

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

** Required for DON and OSD submit only.

R-1 SHOPPING LIST - Item No. 59

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603654N/Joint Service EOD Development				1317/EOD Diving Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	EODTD, IH, MD	33.862			1.424	10/04	0.441	10/05	0.800	10/06	Continuing	Continuing	
Software Development	WX	EODTD, IH, MD	1.791			0.147	10/04	0.254	10/05	0.500	10/06	Continuing	Continuing	
Systems Engineering	WX	EODTD, IH, MD	8.105			0.123	10/04					Continuing	Continuing	
ILS	WX	EODTD, IH, MD	11.867			0.049	10/04					Continuing	Continuing	
Systems Engineering	WX	NSWC, PC						0.190	10/05	0.190	10/06	Continuing	Continuing	
Systems Engineering	WX	SPAWAR						0.400	10/05	0.200	10/06	Continuing	Continuing	
														0.000
														0.000
														0.000
														0.000
														0.000
Subtotal Product Development			55.625			1.743		1.285		1.690		0.000	60.343	
Remarks:														
Program Management Support	C/CPFF	EDO, Alex, VA	3.537									0.000	3.537	
Program Management Support	C/CPFF	EDO, Alex, VA	0.500			0.123	10/04	0.350	10/05	0.258	10/06	Continuing	Continuing	
Integrated Logistics Support														0.000
Configuration Management														0.000
Technical Data														0.000
GFE														0.000
Award Fees														0.000
Subtotal Support			4.037			0.123		0.350		0.258		0.000	4.768	
Remarks:														

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)										DATE:		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603654N/Joint Service EOD Development				1317/EOD Diving Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	EODTD, IH, MD	4.020			0.147	10/04	0.050	10/05	0.050	10/06	Continuing	Continuing	
Operational Test & Evaluation	WX	EODTD, IH, MD	1.560											1.560
														0.000
														0.000
														0.000
														0.000
														0.000
Subtotal T&E			5.580			0.147		0.050		0.050		0.000		5.827
Remarks:														
Program Management Support	WX	EODTD, IH, MD	6.917			0.221	10/04	0.275	10/05	0.360	10/06	Continuing	Continuing	
Miscellaneous	WX	Various	5.731			0.197	10/04	0.302	10/05	0.342	10/06	Continuing	Continuing	
														0.000
														0.000
														0.000
														0.000
Subtotal Management			12.648			0.418		0.577		0.702		0.000		14.345
Remarks:														
Total Cost			77.890			2.431		2.262		2.700		0.000		85.283
Remarks:														

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/ BA-4	PROGRAM ELEMENT 0603654/Joint Service EOD Development			PROJECT NUMBER AND NAME 1317/EOD Diving Systems				
		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ADVANCED U/W LIMPET MINE								
Testing		1Q-2Q						
Production Decision		4Q						
Production			1Q-4Q					
ACOUSTIC FIRING SYSTEM (PIP)								
Testing			1Q-4Q	1Q-2Q				
Production Decision				3Q				
Production					1Q-4Q	1Q-3Q		
UIS PIP								
Testing				4Q	1Q-4Q	1Q-4Q	1Q-2Q	
Production Decision							3Q	
Production							4Q	1Q-4Q
DIVER HULL NAVIGATION								
Testing		1Q-4Q	1Q-4Q	1Q				
Production Decision				1Q-2Q				
Production				2Q-4Q	1Q-4Q	1Q-4Q		

R-1 SHOPPING LIST - Item No. 59

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		9.681*	8.363	6.155	5.389	4.630	4.039	4.116
RDT&E Articles Qty		Various	Various	Various	Various	Various	Various	Various

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides for development of small affordable, Unmanned Underwater Systems to support Explosive Ordnance Disposal (EOD) and Naval Special Clearance Team mission operations. The equipment must be highly portable in order to support the EOD technician to safely approach, render-safe, and dispose of sea mines and other underwater ordnance. Provides support for the Navy's high priority mission of Very Shallow Water (VSW) mine countermeasures, including clandestine reconnaissance and mine clearance in support of amphibious operations. Development of EOD UUV systems to support localization render-safe and detailed intelligence gathering of UXO including Underwater Improvised Explosive Devices.

* Includes a \$3.4M Congressional Add for Magneto-Inductive Technology

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV

(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	6.281	8.363	6.155
RDT&E Articles Quantity	Various	Various	Various

This program supports development, testing and Fleet approval for evolving generations of small, affordable UUV's to address validated Fleet requirements in support of Explosive Ordnance Disposal and Naval Special Clearance team missions areas.

*Starting in FY05 effort was moved from Program Element 0603654N, Project Q1317.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.400	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various

This Program supports development, testing and fleet approval for Magneto-Inductive technology used to transmit commands to remotely placed receivers that are connected to explosive mission packages and tools associated with Naval Special Clearance Team missions in the Very Shallow Water zone.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various

R-1 SHOPPING LIST - Item No. 59

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV																																
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">(U) Funding:</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget (FY06 Pres Controls)</td> <td style="text-align: right;">9.796</td> <td style="text-align: right;">8.491</td> <td style="text-align: right;">6.240</td> </tr> <tr> <td>Current BES/President's Budget (FY07 Pres Controls)</td> <td style="text-align: right;">9.681</td> <td style="text-align: right;">8.363</td> <td style="text-align: right;">6.155</td> </tr> <tr> <td style="padding-left: 20px;">Total Adjustments</td> <td style="text-align: right;">-0.115</td> <td style="text-align: right;">-0.128</td> <td style="text-align: right;">-0.085</td> </tr> <tr> <td style="padding-left: 20px;">Summary of Adjustments</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Programmatic Changes</td> <td></td> <td></td> <td style="text-align: right;">-0.085</td> </tr> <tr> <td style="padding-left: 40px;">Other General Provisions</td> <td style="text-align: right;">-0.115</td> <td style="text-align: right;">-0.128</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right;">-0.115</td> <td style="text-align: right;">-0.128</td> <td style="text-align: right;">-0.085</td> </tr> </tbody> </table> <p>(U) Schedule:</p> <p>As a result of non-availability of Fleet operator to participate in Requirements Compliance Test & Evaluation (RCT&E) 1st generation small UUV (SCM) production decision and contract award adjusted from 2nd QTR FY05 to 4th QTR FY05. The 2nd generation UUV re-acquire & ID prototype development adjusted from 1st QTR FY05 to 3rd QTR FY05 due to prototype system sensor enhancement requirements. The 3rd generation UUV Neutralization adjusted from 1st QTR FY06 to 3rd QTR FY06 due to additional development requirements. Magneto-Inductive prototype development adjusted from 1st QTR FY05 to 3rd QTR FY05 due to contract negotiations relating to data rights.</p> <p>(U) Technical:</p> <p>Not applicable</p>			(U) Funding:	FY 2005	FY 2006	FY 2007	Previous President's Budget (FY06 Pres Controls)	9.796	8.491	6.240	Current BES/President's Budget (FY07 Pres Controls)	9.681	8.363	6.155	Total Adjustments	-0.115	-0.128	-0.085	Summary of Adjustments				Programmatic Changes			-0.085	Other General Provisions	-0.115	-0.128		Subtotal	-0.115	-0.128	-0.085
(U) Funding:	FY 2005	FY 2006	FY 2007																															
Previous President's Budget (FY06 Pres Controls)	9.796	8.491	6.240																															
Current BES/President's Budget (FY07 Pres Controls)	9.681	8.363	6.155																															
Total Adjustments	-0.115	-0.128	-0.085																															
Summary of Adjustments																																		
Programmatic Changes			-0.085																															
Other General Provisions	-0.115	-0.128																																
Subtotal	-0.115	-0.128	-0.085																															

R-1 SHOPPING LIST - Item No. 59

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN 0975	2305	4069	11540						

(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisitions strategies of the most cost-effective solution over the subprojects' life -cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modifications), non-developmental item (including modifications), and lastly, developmental programs. Contracting for RDT&E, if required is always competitive and when feasible, production options are included. This ongoing program capitalizes on a User Operational Evaluation System (UOES) effort involving Fleet operators engaged in tactical experimentation with prototype UUVs. These UUV operators also participate in detailed requirements analyses and definition. A preliminary operational capability with UUV will be realized at the Naval Special Clearance Team One (NSCT-1), with a competitive acquisition strategy to field a more robust and capable first generation S-C-M system. The addition of mine Reacquisition and Identification (RI) capabilities to the VSW MCM UUV toolbox is programmed, for delivery. Further improvements to the toolbox to add basic mine neutralization capabilities will then be pursued. EOD UUV systems providing capability to localize, Render Safe & gather detailed intelligence of UXO is programmed for acquisition.

(U) F. MAJOR PERFORMERS: **

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD FY05 through FY07. The funding is used for development of Unmanned Underwater Vehicle(s). The funding document will be issued as follows: FY05- 10/04, FY06-10/05, FY07-10/06.

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

** Required for DON and OSD submit only.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603654N/Joint Service EOD Development				4023/EOD VSW MCM/Force Protection UUV							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	EODTD, IH, MD	3.843			3.372	10/04	2.812	10/05	1.913	10/06	Continuing	Continuing	
Systems Engineering	WX	EODTD, IH, MD	0.000			3.169	10/04	2.849	10/05	1.970	10/06	Continuing	Continuing	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			3.843			6.541		5.661		3.883		0.000	19.928	
Remarks:														
Program Management Support	C/CPFF	EDO, Alex, VA	0.000			0.650	10/04	0.712	10/05	0.616	10/06	Continuing	Continuing	
Program Management Support	C/CPFF	EDO, Panama City FL	0.000									Continuing	Continuing	
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			0.650		0.712		0.616		0.000	1.978	
Remarks:														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME									
RDT&E, N / BA-4				0603654N/Joint Service EOD Development				4023/EOD VSW MCM/Force Protection UUV									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract			
Developmental Test & Evaluation	WX	EODTD, IH, MD	0.000			1.710	10/04	1.180	10/05	0.986	10/06	Continuing	Continuing				
Operational Test & Evaluation	WX	EODTD, IH, MD	0.000			0.290	10/04	0.290	10/05	0.252	10/06	Continuing	Continuing				
													0.000				
													0.000				
													0.000				
													0.000				
Subtotal T&E			0.000			2.000		1.470		1.238		0.000	4.708				
Remarks:																	
Program Management Support	WX	EODTD, IH, MD	0.000			0.490	10/04	0.370	10/05	0.310	10/06	Continuing	Continuing				
Miscellaneous	WX	Various	0.678					0.150	10/05	0.108	10/06	Continuing	Continuing				
													0.000				
													0.000				
													0.000				
Subtotal Management			0.678			0.490		0.520		0.418		0.000	2.106				
Remarks:																	
Total Cost			4.521			9.681		8.363		6.155		0.000	28.720				
Remarks:																	

CLASSIFICATION:

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EXHIBIT R-4, Schedule Profile																DATE: February 2006															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4				PROGRAM ELEMENT NAME AND JT Service EOD Dev 0603654N								PROJECT NAME AND NUMBER 4023/EOD VSW MCM/Force Protection UUV																			
0603654N Joint Service EOD Development; 4023 EOD VSW MCM/Force Prttection UUV																															
RDT&E Milestone Chart																															
			FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY2010				FY2011				
			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	
Small UUV																															
2nd Generation (Require and ID)																															

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CLASSIFICATION:

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EXHIBIT R-4, Schedule Profile

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY
RDT&E, N/BA-4

PROGRAM ELEMENT NAME AND NUMBER
JT Service EOD Dev 0603654N

PROJECT NAME AND NUMBER
4023/EOD VSW MCM/Force Protection UUV

0603654N Joint Service EOD Development; 4023/EOD VSW MCM/Force Protection UUV

RDT&E Milestone Chart

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
3rd Generation (Neutralization)																												
Analysis of Alternatives (AOA) Study																												
Requirements Definition																												
UOES Operational Eval System																												
Testing Final																												
Production Decision (1st Generation)																												
Preliminary Operational Capability																												
Production																												
Spiral CIP																												
Magneto-Inductive																												
Requirements Definition																												
Prototype Development																												
Final Testing																												
Production Decision																												
IOC Production																												
Spiral CIP																												

R-1 SHOPPING LIST - Item No. 59

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/ BA-4	PROGRAM ELEMENT 0603654/Joint Service EOD Development			PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV				
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
1st Generation Small UUV (Search, Classify & Map)								
Testing Final	1Q-2Q							
Production Decision	4Q							
Production	4Q	1Q-3Q						
Spiral CIP		4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q		
2nd Generation (Require and ID)								
UOES Operational Eval System	1Q							
Preliminary Operational Capability	3Q							
IOC Prototype Development	2Q-4Q	1Q-3Q						
IOC Testing		3Q-4Q	1Q					
IOC Production Decision			1Q					
IOC Production			2Q-4Q	1Q-3Q				
Spiral CIP			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
3rd Generation (Neutralization)								
Analysis of Alternatives (AOA)	1Q-2Q							
Requirements Definition	1Q-4Q	1Q-3Q						
UOES Operational Eval System		3Q-4Q	1Q-4Q	1Q-3Q				
Testing Final				3Q-4Q	1Q			
Production Decision (1st Generation)					2Q			
Preliminary Operational Capability					3Q			
Production					3Q-4Q	1Q-4Q		
Spiral CIP						1Q-4Q	1Q-4Q	
Magneto-Inductive								
Requirements Definition	1Q-3Q							
Prototype Development	3Q-4Q	1Q-4Q	1Q-4Q		1Q			
Final Testing					1Q-3Q			
Production Decision					3Q			
IOC Production						1Q-4Q	1Q-3Q	
Spiral CIP						2Q-4Q	1Q-4Q	

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2, RD TEN Project Justification
(Exhibit R-2, page 38 of 46)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 4024/SMCM Shallow and Deep Water UUV			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.777	0.000	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty		Various	Various	Various	Various	Various	Various	Various

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides for development of Small Low Cost Unmanned Underwater Vehicles to support dedicated mine countermeasures operations. The UUV systems must have a small deployment footprint for rapid employment aboard various SMCM platforms. Equipment includes Launch Recovery Sub-Systems and associated systems support equipment.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4024/SMCM Shallow and Deep Water UUV

(U) B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	1.777	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various

Demonstrate operation of a UUV-based capability package for standoff, multiple MCM operations from surface MCM platforms (e.g., MHC, HSV, etc.)

*Starting in FY06 effort executed in Program Element 0603502N, Surface and Shallow Water MCM; Project 3123, SMCM UUV.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4024/SMCM Shallow and Deep Water UUV																												
<p>(U) C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding-left: 20px;">(U) Funding:</th> <th style="text-align: right; padding-right: 20px;">FY 2005</th> <th style="text-align: right; padding-right: 20px;">FY 2006</th> <th style="text-align: right; padding-right: 20px;">FY 2007</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 20px;">Previous President's Budget (FY06 Pres Controls)</td> <td style="text-align: right;">1.778</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td style="padding-left: 20px;">Current BES/President's Budget (FY07 Pres Controls)</td> <td style="text-align: right;">1.777</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td style="padding-left: 20px;">Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.001</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> <tr> <td style="padding-left: 40px;">Summary of Adjustments</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 60px;">Other General Provisions</td> <td style="text-align: right; border-top: 1px solid black;">-0.001</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> <tr> <td style="padding-left: 60px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.001</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> </tr> </tbody> </table> <p>(U) Schedule:</p> <p style="padding-left: 40px;">Not applicable</p> <p>(U) Technical:</p> <p style="padding-left: 40px;">Not applicable.</p>			(U) Funding:	FY 2005	FY 2006	FY 2007	Previous President's Budget (FY06 Pres Controls)	1.778	0.000	0.000	Current BES/President's Budget (FY07 Pres Controls)	1.777	0.000	0.000	Total Adjustments	-0.001	0.000	0.000	Summary of Adjustments				Other General Provisions	-0.001	0.000	0.000	Subtotal	-0.001	0.000	0.000
(U) Funding:	FY 2005	FY 2006	FY 2007																											
Previous President's Budget (FY06 Pres Controls)	1.778	0.000	0.000																											
Current BES/President's Budget (FY07 Pres Controls)	1.777	0.000	0.000																											
Total Adjustments	-0.001	0.000	0.000																											
Summary of Adjustments																														
Other General Provisions	-0.001	0.000	0.000																											
Subtotal	-0.001	0.000	0.000																											

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development	PROJECT NUMBER AND NAME 4024/SMCM Shallow and Deep Water UUV
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(U) D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
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(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new projects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modifications), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

The Surface Mine Countermeasures (SMCM) UUV program began in FY04 with a two-year experimentation phase involving Fleet Mine Warfare operators engaged in tactical experimentation with prototype UUVs operating from Surface MCM platforms. The focus of this program is to increase the current capabilities of Surface MCM ships while reducing the overall risk to MCM forces. During this two-year initiative, these UUV Fleet operators will develop tactics for employing UUV systems from SMCM platforms along with operational requirements. Upon completion of the two-year experimentation phase, a competitive acquisition strategy will begin to field a more capable and robust first generation system.

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD in FY05. The funding is used to develop an Unmanned Underwater Vehicle. The funding document has been issued as follows: FY05 10/04.

* Not required for Budget Activities 1,2,3, and 6
 ** Required for DON and OSD submit only.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603654N/Joint Service EOD Development				4024/SMCM Shallow and Deep Water UUV							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	EODTD, IH, MD	0.000			1.512	10/04					Continuing	Continuing	
Software Development													0.000	
Systems Engineering													0.000	
ILS													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			0.000			1.512		0.000		0.000		0.000	1.512	
Remarks:														
Program Management Support	C/CFF	EDO, Alex, VA	0.000									Continuing	Continuing	
Program Management Support													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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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603654N/Joint Service EOD Development				4024/SMCM Shallow and Deep Water UUV								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation	WX	EODTD, IH, MD	0.000									Continuing	Continuing		
Operational Test & Evaluation	WX												0.000		
													0.000		
													0.000		
													0.000		
													0.000		
													0.000		
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000		
Remarks:															
Program Management Support	WX	EODTD, IH, MD	0.000			0.265	10/04					Continuing	Continuing		
Miscellaneous	WX	Various										Continuing	Continuing		
													0.000		
													0.000		
													0.000		
Subtotal Management			0.000			0.265		0.000		0.000		0.000	0.265		
Remarks:															
Total Cost			0.000			1.777		0.000		0.000		0.000	1.777		
Remarks:															

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-4, Schedule Profile	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND JT Service EOD Dev 0603654N	PROJECT NAME AND NUMBER 4024/SMCM Shallow and Deep Water UUV
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0603654N Joint Service EOD Development; 4024 SMCM Shallow and Deep Water UUV

RDT&E Milestone Chart

	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
SMCM Shallow & Deep Water UUV Notional CONOPS (AOA) Study Requirements Definition																												

R-1 SHOPPING LIST - Item No. 59

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603658N Cooperative Engagement Capability			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	99.618	99.557	53.406	50.458	53.738	57.975	55.171	
2039/Cooperative Engagement Capability (CEC)	\$99.618	\$86.757	\$53.406	\$50.458	\$53.738	\$57.975	\$55.171	
9999/Congressional Adds		\$12.800						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture capable of fire control quality. CEC distributes sensor data from each ship and aircraft, or cooperating unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system. CEC significantly improves our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC provides critical connectivity and integration of over-land air defense systems capable of countering emerging air threats, including land attack cruise missiles, in a complex littoral environment.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and Combat System modifications. The DDS encodes and distributes ownship sensor and engagement data and is a high capacity, jam resistant, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor that is able to process force levels of data in near real-time. This data is passed to the ship's combat system as high quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

The Navy has begun implementation of a Pre-Planned Product Improvement (P3I) approach to modify the current equipment to meet reduced size, weight, cost, power and cooling objectives. This P3I approach also supports continuity for interoperability improvements and program protection, as well as supporting open architecture initiatives, comms independence, Joint Tactical Radio System (JTRS) compliancy, and Global Information Grid (GIG) horizontal fusion initiatives. P3I will provide hardware which complies with Category 3 Open Architecture Computing Environment (OACE) standards with rehosted existing software, which will be fielded fleet-wide to allow affordable replacement of obsolete computing system components and eliminate dependencies on "closed" equipment, operating systems, and middleware.

Additionally, CEC is working with Joint Single Integrated Air Picture System Engineering Organization (JSSEO) to jointly engineer a sensor measurement fusion and track management algorithm set of solutions which is viable for all Services to implement toward achieving optimum interoperability across the battlespace. This effort supports re-architecting of battleforce functionality in order to support the Navy's Open Architecture functional architecture which establishes a common functional framework across Navy programs and platforms to reduce development cost by promoting software reuse. This architecture promotes interoperability by allowing functionality to be consistently engineered across the battlespace. The Open Architecture Track Manager (OATM) is derived from an Integrated Architecture Behavioral Model (IABM) through a series of configuration deliveries which will include Joint Track Management (JTM) functionality. General Dynamics was competitively awarded the Systems Integrator/Design Agent (SI/DA) contract in March 2005 to facilitate the development, integration, and testing of the JTM functionality across the applicable Navy Programs (e.g. DD(X), E-2, LCS).

R-1 SHOPPING LIST - Item No. 60

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 1 of 11)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	2039/Cooperative Engagement Capability		
B. Accomplishments/Planned Program				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	7.849	12.518	2.000	
RDT&E Articles Quantity				
<p>FY05 Plans: Continued development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Completed FOT&E-2 testing efforts on E-2C. Began FOT&E-3 testing efforts on SSDS Mk2 Mod 1 (CVN 76) equipped ships.</p> <p>FY06 Plans: Continue development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Complete FOT&E-3 testing efforts. Begin FOT&E-4 testing efforts on SSDS Mk2 Mod 2 (LPD 17) equipped ships.</p> <p>FY07 Plans: Continue development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Complete FOT&E-4 testing efforts and finalize test analysis.</p>				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	5.300	7.570	14.372	
RDT&E Articles Quantity				
<p>FY05 Plans: Completed E-2C HAWKEYE 2000 aircraft and CEC AN/USG-3 system integration. Begin CEC integration with E-2D.</p> <p>FY06 Plans: Continue CEC integration efforts with E-2D and begin CEC integration efforts with Naval Integrated Fire Control - Counter Air (NIFC-CA).</p> <p>FY07 Plans: Continue CEC integration efforts with E-2D and NIFC-CA.</p>				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.200	1.300	1.200	
RDT&E Articles Quantity				
<p>FY05 Plan: Completed Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.</p> <p>FY06 Plan: Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.</p> <p>FY07 Plan: Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.</p>				

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UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability	PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability		
B. Accomplishments/Planned Program (Cont.)				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	31.500	20.149	18.245	
RDT&E Articles Quantity				
<p>FY05 Plans: Awarded Systems Integrator/Design Agent (SI/DA) contract for Open Architecture Track Manager (OATM) / Integrated Architecture Behavioral Model (IABM) integration, implementation, and test. Completed Open Architecture (SSDS) efforts.</p> <p>FY06 Plans: Continue SI/DA contract for OATM / IABM integration, implementation, and test.</p> <p>FY07 Plans: Continue SI/DA contract for OATM / IABM integration, implementation, and test.</p>				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	40.500	29.500	1.000	
RDT&E Articles Quantity				
<p>FY05 Plans: Continued P3I hardware and software efforts, rehost of existing software on Open Architecture Computing Environment (OACE) CEP, comms independence efforts including antenna alternatives and JTRS compliancy, and Mini Terminal alternatives.</p> <p>FY06 Plans: Continue P3I hardware and software efforts including DDS breakup and test, comms independence efforts including antenna alternatives and JTRS compliancy, and Mini Terminal alternatives efforts.</p> <p>FY07 Plans: Complete Mini Terminal alternatives efforts.</p>				
	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	5.759	6.640	9.469	
RDT&E Articles Quantity				
<p>FY05 Plans: Continued CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Planar Array Active Antenna (PAAA), and Modeling and Simulation.</p> <p>FY06 Plans: Continue CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Planar Array Active Antenna (PAAA), and Modeling and Simulation.</p> <p>FY07 Plans: Continue CEC system improvements including enhanced communications, expansion of networking capability, development of system protection/multi-level secure operational-level secure operations, Planar Array Active Antenna (PAAA), and Modeling and Simulation.</p>				

R-1 SHOPPING LIST - Item No. 60

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability	PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability

B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	2.000	2.000	2.000
RDT&E Articles Quantity			

FY05 Plan: Continued participation in system interoperability exercises, Joint Integrated Demonstrations, and Network Centric Collaborative Targeting (NCCT).
 FY06 Plan: Continue participation in system interoperability exercises and Joint Integrated Demonstrations.
 FY07 Plan: Continue participation in system interoperability exercises and Joint Integrated Demonstrations.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	5.510	7.080	5.120
RDT&E Articles Quantity			

FY05 Plan: Continued field activity support of CEC development efforts (I.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.
 FY06 Plan: Continue field activity support of CEC development efforts (I.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.
 FY07 Plan: Continue field activity support of CEC development efforts (I.e. Technical Direction Agent, In-Service Engineering, Integrated Logistics Support Planning) and program management support.

R-1 SHOPPING LIST - Item No. 60

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability	PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget:	102.150	88.135	59.881
FY07 President's Budget:	99.618	86.757	53.406
Total Adjustments	-2.532	-1.378	-6.475
Summary of Adjustments			
Programmatic Changes			-6.325
Other General Provisions	-.242	-1.378	
SBIR	-2.290		
Other misc. changes			-.150
Subtotal	-2.532	-1.378	-6.475

Schedule:

AN/USG-3 Initial Operational Capability (IOC) and AN/USG-2 Full Operational Capability (FOC) was achieved May 2005.

Technical:

Future AN/USG-2 and AN/USG-3 systems will incorporate Pre-Planned Product Improvements (P3I) to take advantage of hardware technology advances to provide a system with reduced cost, size, and weight. Additionally, the CEC Program Office is working with the Joint Single Integrated Air Picture Systems Engineering Organization (JSSEO) to jointly engineer a sensor measurement fusion and track management set of algorithms which is viable for all Services to implement toward achieving joint interoperability across the battle space. The Open Architecture Track Manager (OATM) is derived from an Integrated Architecture Behavioral Model (IABM) through a series of configuration deliveries which will include joint track management functionality. The Joint Architecture Working group (JAWG) continues to align and define a common architecture. The JAWG is completing its efforts to document jointly agreed upon requirements and functionality, which need to be satisfied as the foundation for the initial increment of capability. The Multi-Service Engineering Assessment Working Group remains on track with its maturity assessments of the IABM incremental development releases. General Dynamics was competitively awarded the OATM Systems Integrator/Design Agent contract to facilitate OATM functional implementation across applicable Navy Programs.

R-1 SHOPPING LIST - Item No. 60

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability			PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability				
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
RDT&E,N 0206313M	3.500	4.000	2.300	.900	.600			CONT	CONT
DD(X) RDTEN 0604300N			8.500					CONT	CONT
E-2D HAWKEYE 2000 RDTEN 0604234N				21.300				CONT	CONT
PMC 4640				3.000	7.000	10.000	5.000	CONT	CONT
CEC OPN 2606	67.067	20.507	22.502	32.548	37.766	31.802	27.475	CONT	CONT
CG Modernization OPN 0960		5.618	10.535	11.025	16.915	17.342	17.918	CONT	CONT
E-2C Aircraft APN 0195	11.300				17.399	17.820	18.176	CONT	CONT
Various - SCN Procurement	7.908	15.351	6.751	30.549	22.340	40.388	30.767	CONT	CONT
E. ACQUISITION STRATEGY:									
A revised Acquisition Strategy was approved August 2004 to reflect the realignment of track management functions with the Joint Single Integrated Air Picture Systems Engineering organization (JSSEO) approach and Navy Open Architecture, while competing Systems Integrator functions, and utilizing a Pre-Planned Product Improvement (P3I) program in lieu of a CEC Block 2 development effort. This approach will allow for multiple industry participants and focus on joint involvement.									
F. MAJOR PERFORMERS:									
General Dynamics Advanced Information Systems	Fairfax, Virginia	Systems Integration / Design Agent Development							
Raytheon Systems Company	St. Petersburg, FL	Development of AN/USG-2 (shipboard) and AN/USG-3 (airborne) equipment and support of testing.							
Johns Hopkins University, Applied Physics Laboratory	Laurel, MD	Technical Design Agent for AN/USG-2 and AN/USG-3 equipment and support of testing.							
Northrop-Grumman Corporation	Bethpage LI, NY	Integration of AN/USG-3 equipment with E-2C HAWKEYE 2000 and Advanced E2 aircraft.							
Naval Surface Weapons Center	Dahlgren, VA	Software Support Activity (SSA) and Systems Engineering/Integration Agent (SE/IA).							

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CLASSIFICATION:

Exhibit R-3 Project Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N / BA-4			0603658N Cooperative Engagement Capability				2039/Cooperative Engagement Capability					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Development	CPAF	Raytheon, St. Petersburg, FL	590.774	7.118	Oct-04	5.584	Oct-05	5.880	Oct-06	Continuing	Continuing	TBD
AN/USG-2/3 Development	CPAF	Award Fees	88.196	1.053	Oct-04	.827	Oct-05	.879	Oct-06	Continuing	Continuing	TBD
AN/USG-2/3 Development/TDA	CPFF	JHU/APL, Laurel, MD	255.108	5.885	Feb-05	9.236	Oct-05	4.000	Oct-06	Continuing	Continuing	TBD
Block 2 Development/Competition	CPAF	Various	11.000								11.000	11.000
SI/DA	CPAF	General Dynamics		18.157	Mar-05	17.852	Dec-05	16.165	Dec-06	Continuing	Continuing	TBD
SI/DA	CPAF	Award Fees		2.343	Mar-05	2.297	Dec-05	2.080	Dec-06	Continuing	Continuing	TBD
P3I	CPAF	Raytheon	17.420	14.415	Dec-04	20.468	Dec-05			Continuing	Continuing	TBD
P3I	CPAF	Award Fees	2.580	2.135	Dec-04	3.032	Dec-05			Continuing	Continuing	
E-2C/AHE Aircraft Integration	CPAF	Northrop-Grumman, LI., NY	185.408	2.000	Dec-04						187.408	187.408
NIFC-CA Integration/E2-D	TBD	Various	7.908			7.570	Nov-05	14.372	Nov-06	Continuing	Continuing	TBD
Tactical Component Network (TCN)	CPFF	Various	14.576								14.576	14.576
P-3 Aircraft Integration	CPAF	Lockheed-Martin	40.377								40.377	40.377
Baseline 2.2 Development	CPAF	Lockheed-Martin	11.881								11.881	11.881
Space Based IR Sensors (SBIRS)	CPAF	Lockheed-Martin	12.843								12.843	12.843
Modeling & Simulation	PD	PMS-456	5.261								5.261	TBD
In-Service Engineering Activity	WX	NSWC, Port Hueneme, CA	20.959	.247	Nov-04	.132	Nov-05	1.338	Nov-06	Continuing	Continuing	TBD
Land Based Test Network	PD	SPAWAR (PMW-159)	1.302								1.302	1.302
Land Based Test Network	PD	NATC, Patuxent River, MD	.957								.957	.957
Software Support Activity/SEIA	WX	NSWC, Dahlgren, VA	61.472	4.885	Nov-04	1.300	Nov-05	1.500	Nov-06	Continuing	Continuing	TBD
Antenna Redesign	RC	NSWC, Crane, IN	6.483								6.483	6.483
Production Engineering Activity	WX	NSWC, Crane, IN	42.243	1.745	Nov-04	1.272	Nov-05	.169	Nov-06	Continuing	Continuing	TBD
AEGIS Integration	CPAF	Lockheed-Martin	124.933								124.933	124.933
SSDS/ACDS Integration	CPAF	Raytheon, San Diego, CA	39.871								39.871	39.871
Area Air Def. Commander (AADC)	CPAF	General Dynamics	10.096								10.096	10.096
SIAP Improvements	CPFF	JHU/APL, Laurel, MD	1.528								1.528	1.528
JTRS	Various	Various	5.000	10.000	May-05	10.000	Nov-05				25.000	25.000
SSDS OA	CPAF	Raytheon, San Diego, CA	4.474	10.941	Dec-04						15.415	15.415
RMP	Various	Various		3.300	Feb-05						3.300	3.300
Modeling & Simulation	TBD	TBD						2.750	Nov-06		2.750	2.750
Various	Various	Miscellaneous	82.272	8.829	Various	1.925	Various	1.924	Various	Continuing	Continuing	TBD
Subtotal Product Development			1,644.922	93.053		81.495		51.056		Continuing	Continuing	TBD
Remarks:												

R-1 SHOPPING LIST - Item No. 60

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 7 of 11)

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Project Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603658N Cooperative Engagement Capability			2039/Cooperative Engagement Capability						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test Support	CPAF	Raytheon, St. Peters., FL	9.335	.871	Dec-04	.871	Oct-05	.435	Oct-06	Continuing	Continuing	TBD
Test Support	CPAF	Award Fees	1.383	.129	Dec-04	.129	Oct-05	.065	Oct-06	Continuing	Continuing	TBD
Test Support	CPFF	JHU/APL, Laurel, MD	11.107	.500	Feb-05	.500	Oct-05	.300	Oct-06	Continuing	Continuing	TBD
Test Support	WX	NRL, Washington, DC	7.582	1.280	Jan-05						8.862	8.862
Test Support	WX	NSWC, Port Hueneme, CA	33.059	1.126	Jan-05	1.200	Oct-05	.400	Oct-06	Continuing	Continuing	TBD
Air Operations Test Support	WX	NAVAIR (PMA-207)	7.459	.500	Jan-05						7.959	7.959
Test Data Reduction Analysis	WX	NWAS, Corona, CA	18.064	1.400	Oct-04	.883	Oct-05	.500	Oct-06	Continuing	Continuing	TBD
Test Support	WX	NSWC, Crane, IN	0.185	.094	Jan-05	.094	Oct-05			Continuing	Continuing	TBD
Test Support	WX	COMOPTVFOR, VA	8.554	.100	Jan-05	1.035	Oct-05	.300	Oct-06	Continuing	Continuing	TBD
Various	Various	Various	7.908								7.908	7.908
Subtotal Test & Evaluation			104.636	6.000		4.712		2.000		Continuing	Continuing	TBD
Remarks:												
Program Management Support	FFP	Various	60.932	.565	Oct-04	.550	Oct-05	.350	Oct-06	Continuing	Continuing	TBD
Subtotal Management			60.932	.565		.550		.350		Continuing	Continuing	TBD
Remarks:												
Total Cost			1,810.490	99.618		86.757		53.406		Continuing	Continuing	TBD
Remarks:												

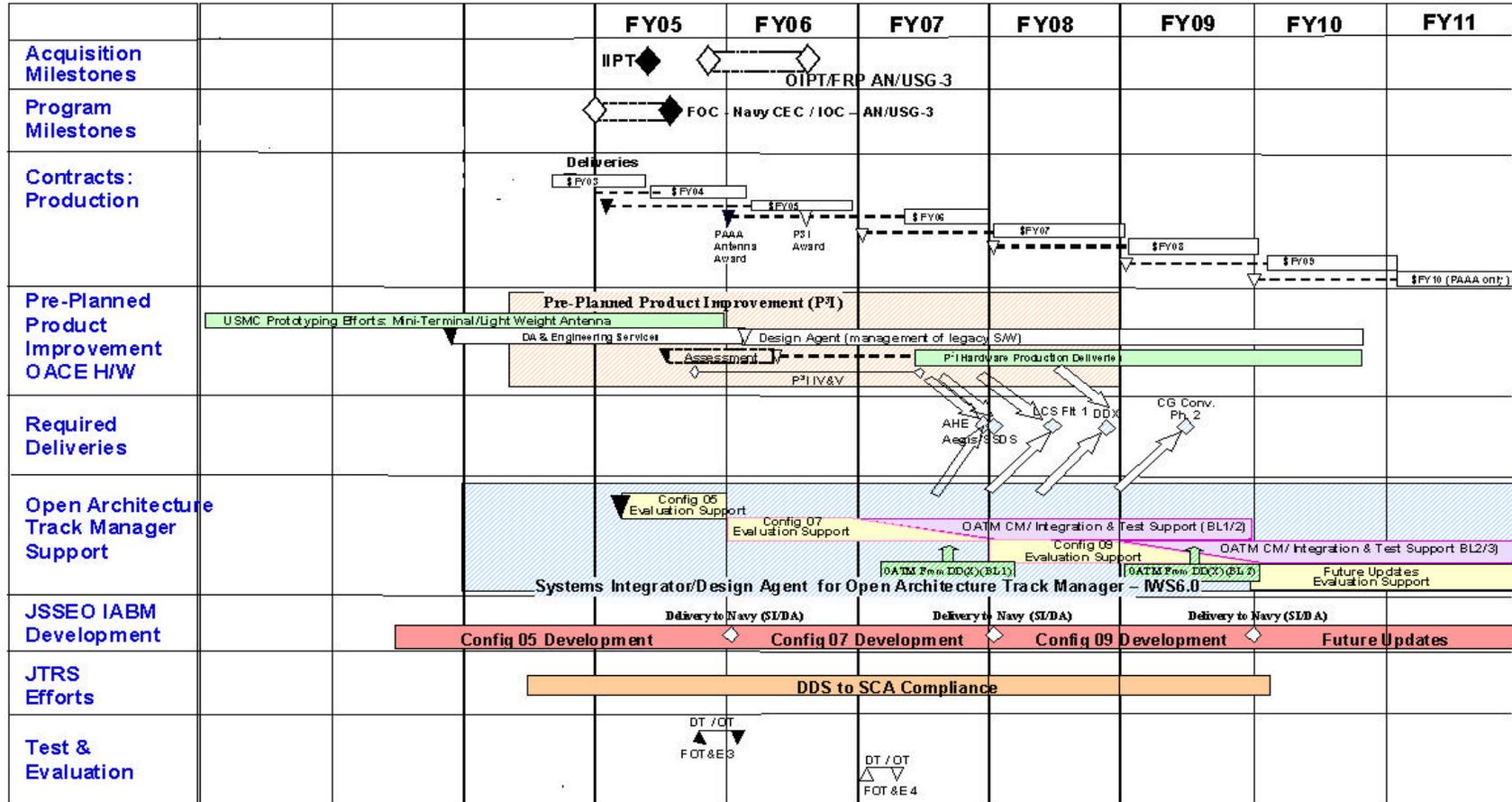
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EXHIBIT R4, Schedule Profile	DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability	PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability



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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603658N Cooperative Engagement Capability	PROJECT NUMBER AND NAME: VARIOUS CONGRESSIONAL ADD		
CONGRESSIONAL PLUS-UPS:				
	FY 06			
9825N	12.800			
Cooperative Engagement Capability Tech Refresh In NIFC-CA				
<p>FY06 Plan: Congressional Plus-Up for Cooperative Engagement Capability (CEC)Technology Refresh and NIFC-CA integration efforts.</p>				

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EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603713N/Ocean Engineering Technology Development
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COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	25.442	24.462	16.324	3.717	3.752	3.827	3.901	
0099/Deep Submergence Biomedical Development	3.239	2.944	2.998	3.717	3.752	3.827	3.901	
0394/Shallow Depth Diving Equipment	22.203	21.518	13.326	0	0	0	0	

Defense Emergency Response Funds (DERF) Funds: N/A.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain underwater operations in the areas of search, location, rescue, recovery, salvage, construction, and protection of offshore assets. This program develops medical technology, diver life support equipment, and the vehicles, systems, tools and procedures to permit manned underwater operations.

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME 0099/Deep Submergence Biomedical Development			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		3.239	2.944	2.998	3.717	3.752	3.827	3.901
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Develops advanced biomedical and bioengineering technology for enhancing medical and life support for submarine escape and rescue; and for diver safety and effectiveness; supports deeper, longer, and more flexible dives. Deliverables for DISSUB (disabled submarine) include: medical procedures for submarine escape and rescue (including new Submarine Rescue Diving and Recompression System (SRDRS)), life support parameters, medical procedures for life support, exposure guidance for atmospheric contaminants, non-chemical CO2 scrubbing, prevention and treatment of decompression illness, and senior survivor expert decision system. Deliverables for diver enhancement include: exposure guidance for diver underwater continuous noise, impulse noise, and underwater blast, exposure guidance for oxygen breathing, collection of operational diving depth/time profiles to predict decompression risk, and enhanced underwater swimming efficiency. Requirements: NAPDD #587-873, Deep Submergence Biomedical Development, 23 November 1999.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development	PROJECT NUMBER AND NAME 0099/Deep Submergence Biomedical Development
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.820	1.684	1.689	
RDT&E Articles Quantity				

Diver Health and Safety Research: Pulmonary oxygen toxicity exposure limits. Procedures for assessing and mitigating risk for diving in contaminated water. Procedure to determine remaining CO2 scrubber duration. Development of advanced insulation garments for diver thermal protection. Develop final guidance for warm water diving. Continue collection of operational dive profiles for advanced modeling. Submarine ballast tank air quality survey. Novel methods for diver thermal protection. Improve resistance to O2 toxicity. Diver anthropometry. Chemical hardening of diving equipment. Predictive index of visual and auditory O2 toxicity. Guidelines for flying after diving. Guidelines for infra- and ultra-sound diver exposure. Develop an advanced diver thermal model. Guidelines for ballast tank diving. Protective gear for diver noise exposure. Electronic collection of operational dive data.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	1.423	1.305	1.304	
RDT&E Articles Quantity				

Submarine Rescue: Decompression procedures for pressurized SRDRS operators. Use of perfluorocarbons to accelerate decompression in submarine rescue. Adjunctive therapies for treating DISSUB survivors. Guidance for food, water, clothing, medical supplies to enhance survival of submarine crews awaiting rescue. Flexible computer generated decompression schedules for wide range of conditions in a DISSUB. Develop DISSUB triage procedures. DISSUB survival trial. Develop oxygen metabolizer for closed vehicles. Accelerate decompression by negative pressure breathing. Treatment guidance for decompression sickness and arterial gas embolism in submarine escape and rescue. Interventions for toxicological problems with rescued submariners. Minimizing decompression sickness and arterial gas embolism with Submarine Escape and Immersion Suit (SEIS) training. Use of pharmacologic agents to reduce decompression risk in submarine rescues.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development	PROJECT NUMBER AND NAME 0099/Deep Submergence Biomedical Development	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 06 President's Controls)	3.248	2.989	2.993
Current Budget (FY07 OSD Budget)	3.239	2.944	2.998
Total Adjustments	-0.009	-0.045	0.005
Summary of Adjustments			
60173 Nuclear Physical Security (OSD)	0.001		
74501 Department of Energy Transfer	-0.002		
90002 Cancelled Accounts Liabilities	-0.008		
62428 Sec. 8125: Revised Economic As		-0.014	
63206 Congressional Action 1% Reduct		-0.031	
51002 Contract Support Reduction			-0.010
51078 N7 Respread of Contractor Supp			-0.002
61956 Inflation			0.013
62069 CIVPERS PAY RAISE RATE			0.004
	-0.009	-0.045	0.005
Schedule:			
Not Applicable			
Technical:			
Not Applicable			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME 0099/Deep Submergence Biomedical Development			
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
Not Applicable									
E. ACQUISITION STRATEGY: *									
Integrated thrust area teams (e.g. decompression research) are established with university, commercial and in-house Navy lab to jointly execute biomedical R&D; peer review of research proposals accomplished by independent Technical Advisory Board; annual review of progress by Executive Review Board (CNO/NAVSEA/ONR/BUMED); program management by 0-6 Medical Dept Officer; contracting by competitive process using BAA and leveraging ONR capabilities.									
F. MAJOR PERFORMERS: **									
Navy Experimental Diving Unit (NEDU) (Oct/each FY) is the center for manned diving biomedical research and development for the Navy. All Navy manned diving research facilities were consolidated at NEDU during the last BRAC.									

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603713N/Ocean Engineering Technology Development			0099/Deep Submergence Biomedical Development								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
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			0.000	0.000		0.000		0.000				0.000	0.000	
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 Cost Analysis (page 2)										DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME 0099/Deep Submergence Biomedical Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date		Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NEDU	23.656	3.017	10/04	2.741	10/05	2.787	10/06		Continuous	32.201	
	CPIF	OceanWorks	1.171									1.171	1.171
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			24.827	3.017		2.741		2.787			0.000	33.372	
Contractor Engineering Support												0.000	
Government Engineering Support												0.000	
Program Management Support	Various		0.217									0.217	
Travel			0.056	0.025	various	0.025	various	0.033	various		Continuous	0.139	
Labor (Research Personnel)												0.000	
*SBIR Assessment			0.146	0.197	various	0.178	various	0.178	various			0.699	
Subtotal Management			0.419	0.222		0.203		0.211			0.000	1.055	
Remarks:*SBIR Assessment includes other extramural program assessments.													
Total Cost			25.246	3.239		2.944		2.998			0.000	34.427	
Remarks:													

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		22.203	21.518	13.326	0	0	0	0
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project is to develop systems to support submarine escape and rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as, Navy needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. Efforts are currently (through FY 07) focused on the Submarine Rescue Diving and Recompression System (SRDRS) to provide a new rapidly deployed emergency submarine rescue capability. SRDRS will fill the gap created by the decommissioning of USS PIGEON (ASR 21) and USS ORTOLAN (ASR 22) and provide a new capability of pressurized transportation of rescuees from a stricken submarine directly to the decompression system eliminating the requirement for Deep Submergence Rescue Vehicles, Mother Submarines and Submarine Rescue Chambers. SRDRS is to include an air transportable rapid assessment/underwater work system, a decompression chamber system and a pressurized rescue module. The SRDRS will provide a global rapid response capability to support submarine rescue missions with an increase in capability at a fraction of the cost of the currently available systems. FY05-07 budget as indicated above is solely for the SRDRS program acquisition.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development	PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	22.203	21.518	13.326	
RDT&E Articles Quantity				

Complete fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Complete design, begin fabrication and acceptance testing of prototype Pressurized Rescue Module and support equipment. Begin integration and testing of all SRDRS components.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development	PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 06 President's Budget Controls)	22.730	21.631	12.036
Current Budget (FY07 President's Budget Controls)	22.203	21.518	13.326
Total Adjustments	-0.527	-0.113	1.290

Summary of Adjustments

18284 SRDRS Delivery Funding		1.300
51002 Contract Support Reduction		-0.641
51051 NWCF Civpers Efficiencies		-0.005
51078 N7 Respread of Contract Support Reduction		0.558
61956 Inflation		0.059
62069 CIVPERS Pay Raise Rate		0.019
62428 Sec. 8125: Revided Economic	-0.098	
62430 Hurricane Expenses	0.237	
62432 Sec. 205: Hurricane Financing	-0.026	
60070 Small Business Innovatic	-0.510	
63206 Congressional Action 1% Reduction	-0.226	
74501 Department of Energy T	-0.017	
	-0.527	1.290

Not Applicable

Technical:

Not Applicable

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment			
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	
Not Applicable										
E. ACQUISITION STRATEGY: *										
<p>The Submarine Rescue System (SRS) segment of the SRDRS is largely based on the use of Commercial-Off-the-Shelf (COTS) technology and maximum use of Non-Developmental Items (NDI). The SRS segment is being procured using performance based specifications. Many of the SRS contracts were awarded competitively and were based on technical capability and cost considerations (best value). Program Management of SRDRS is accomplished through the use of Program Executive Officer, Submarines (PEO SUB) leadership. This change was enacted in February 2003 realigning the responsibility from SEA00C to PEOSUB. The Prototype system will provide full operational capability and no additional procurement is planned. The system is designed to be Government Owned/Commercially Operated (GO/CO).</p>										
F. MAJOR PERFORMERS: **										
<p>Oceanering International is providing systems engineering and integration support for the SRS. Oceanworks, Inc. is the detailed designer and fabrication of the Pressurized Rescue Module.</p>										

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603713N/Ocean Engineering Technology			0394/Shallow Depth Diving Equipment								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Design, System integration	CPAF	Oceaneering (remark 2)	6.638		N/A		N/A		N/A				6.638	
Decompression Chambers (SDC 1 and 2)	FFP	NFESC	3.317		N/A		N/A		N/A				3.317	
Various Mission Support Equip. (MSE)	Various	GPC(Past)/Various (Fut)	8.259	1.243	Various	0.000	Various	0.000	Various				9.502	
Pressurized Rescue Module Sys. (PRMS)	CPIF	Oceanworks	32.785	6.390	Various	9.649	Various	0.483	Various				49.307	
Various PRMS MSE	Various	Miscellaneous	6.094	4.742	Various	2.799	Various	0.000	Various				13.635	
Systems Engineering - Design, Integration	Various	Oceaneering	12.845	1.692	Various	0.829	Various	7.011	Various				22.377	
Systems Engineering - Technical	Various	Various	4.140	0.403	Various	0.537	Various	0.314	Various				5.394	
Licenses													0.000	
GFE													0.000	
Award Fees	CPAF	Oceaneering	1.234		N/A		N/A		N/A				1.234	
	CPAF	GPC	0.254	0.172	Various	0.000	Various	0.000	Various				0.426	
													0.000	
Subtotal Product Development			75.566	14.642		13.814		7.808				0.000	111.830	
Remarks: 1. Restructuring or rephasing of non-rescue related subsystems and components done with N773 and CNSF staff concurrence. 2. Prior year values adjusted to match Submarine Rescue System (SRS) portion only. Other PY costs are for the Assessment/Underwater Work System (AUWS) managed by PMS 394C. 3. SDC-1 and SDC-2 chambers under a FFP contract through NFESC. Contract completion date (CCD) remains 31 August 2003 and was missed. Liquidated damages are being assessed per the FAR. A significant Request for Equitable Adjustment (REA) has been submitted and denied within NAVFESC. Further adjudication or financial liability to program is not included in controls. 4. Adjustments for Oceanworks PRMS cost growths under negotiation with NAVSEA02 and Canadian Commercial Corporation.														
Development Support	Various	Miscellaneous	0.279		N/A		N/A		N/A				0.279	
Software Development	WR	NSWC CD	0.221		N/A		N/A		N/A				0.221	
Integrated Logistics Support	MIPR	DOI, Titan	2.294		N/A		N/A		N/A				2.294	
Integrated Logistics Support	Various	Miscellaneous	0.293	0.841	Various	0.837	Various	0.746	Various				2.717	
Configuration Management	CPAF	Oceaneering	0.170	0.489	Various	0.505	Various	0.340	Various				1.504	
Technical Data													0.000	
GFE													0.000	
Award Fees	CPAF	Phoenix International	0.023		N/A		N/A		N/A				0.023	
Subtotal Support			3.280	1.330		1.342		1.086				0.000	7.038	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603713N/Ocean Engineering Technolo			0394/Shallow Depth Diving Equipment								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	1.093	1.830	Various	2.762	Various	1.903	Various				7.588	
Operational Test & Evaluation	WX	COMOPTEVFOR	0.035	1.678	Various	0.306	Various	0.140	Various				2.159	
													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			1.128	3.508		3.068		2.043				0.000	9.747	
Remarks:														
Contractor Engineering Support	Various	QBS/Various	1.318	0.096	Various	0.074	Various	0.051	Various				1.539	
Government Engineering Support	WX	NFESC	0.476	0.050	Various		N/A		N/A				0.526	
Government Engineering Support	MIPR	DOI	1.161		N/A		N/A		N/A				1.161	
Government Engineering Support	WX	PSNSY, Various	0.223	0.330	Various	0.339	Various	0.350	Various				1.242	
Government Engineering Support	Various	Miscellaneous	1.617	1.017	Various	1.466	Various	0.950	Various				5.050	
Program Management Support	Various	Miscellaneous	0.749	0.386	Various	0.398	Various	0.410	Various				1.943	
Travel	Various	Various	0.817	0.371	Various	0.574	Various	0.382	Various				2.144	
SBIR Assessment (remark 1)			0.897	0.473	Various	0.443	Various	0.246	Various				2.059	
Subtotal Management			7.258	2.723		3.294		2.389				0.000	15.664	
Remarks: SEA 00C to determine FY08 and CTC														
Total Cost			74.434	22.203		21.518		13.326				0.000	131.481	
Remarks: 1. SBIR Assessment includes other extramural program assessments FY 02-05.														

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Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&BA-4	0603713N/Ocean Engineering Technology Development				0394/Shallow Depth Diving Equipment			
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Milestone II (MSII)								
Detail Design/Development and Fab (SDS - SDC, PFMS,	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q			
Detail Design/Devel. and Fab (PRMS - PRMS-1 and PRM	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q			
Critical Design Review (CDR) - PRMS	3Q							
Physical Configuration Audit - SDC			2Q					
Hardware Delivery - SDC-1 and SDC 2			2Q-3Q					
Functional Configuration Audit (FCA) - PRM			3Q-4Q					
Developmental Testing (DT-SDS)					1Q-2Q			
Physical Configuration Audit - PRM			4Q					
Hardware Delivery - PRM-1 and PRMS				1Q				
Developmental Testing (DT-PRMS)			4Q	1Q				
Operational Testing (OPEVAL-PRMS)				1Q				
Acquisition Capability Delivery - Rescue Ready				2Q				
Hardware Delivery - DTL					2Q-3Q			
Developmental Testing (DT-TUP)					3Q			
Operational Testing (OT-TUP)					4Q	1Q		
Acquisition Capability Delivery - TUP						2Q-3Q		
Physical Configuration Audit - PRM-2					2Q			
Hardware Delivery - PRM-2					4Q	1Q		
Operational Evaluation Full SRDRS					4Q	1Q		
Milestone C						2Q		
Acquisition Capability Delivery - Full Up SRDRS						2Q		
First Deployment (Rescue Ready (DSRV Equiv.)				3Q				
First Deployment (Fly Away Recompression w/ TUP)						1Q		
First Deployment Full -Up SRDRS						1Q		
Initial Operational Capability (IOC) of Full Up SRDRS						2Q		

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713/Ocean Engineering Technology	0394/Shallow Depth Diving Equipment Congressional Plus-Ups : VARIOUS
CONGRESSIONAL PLUS-UPS:		
	FY 06	
Identify Project Number	N/A	
Title of Congressional Add	\$\$\$\$	
	FY 06	
Identify Project Number	N/A	
Title of Congressional Add	\$\$\$\$	
	FY 06	
Identify Project Number	N/A	
Title of Congressional Add	\$\$\$\$	

R-1 SHOPPING LIST - Item No. 61

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EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE						
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	PE0603721N / Environmental Protection						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	27.847	27.547	20.271	21.301	21.555	22.192	22.665
Shipboard Waste Management / 0401	16.675	8.873	7.079	7.706	8.089	8.146	8.611
Environmental Compliance / 2210****	0.745	0.828	0.000	0.000	0.000	0.000	0.000
Pollution Abatement / 0817	6.803	7.478	8.929	9.276	9.110	9.646	9.603
Marine Mammal Detection & Mitigation / 9204*	2.028	4.468	4.263	4.319	4.356	4.400	4.451
Anoxia Research In Puget Sound / 9536**	1.353	0.000	0.000	0.000	0.000	0.000	0.000
COMNAVMAR Invasive Species Demonstration Program / 9537***	0.243	0.000	0.000	0.000	0.000	0.000	0.000
Congressional Adds / 9999 *****	0.000	5.900	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Many environmental laws, regulations, and policies impose restrictions on Navy vessels, aircraft, and facilities that interfere with operations and/or increase the cost of operations. The Navy must be able to conduct its national security mission in compliance with applicable environmental requirements in the U.S. and abroad without compromising performance, safety, or health, while simultaneously minimizing the cost of compliance. This program develops and evaluates processes, hardware, systems, and operational procedures that will allow the Navy to operate in U.S., foreign, and international waters, air, space, and land areas while complying with environmental U.S. statutes and international agreements. Projects support the Navy's compliance with: OPNAVINST 5090.1B CH-4 and other Navy environmental related policies; the Clean Water Act, Clean Air Act, Act to Prevent Pollution from Ships, National Environmental Policy Act, Marine Plastic Pollution Research and Control Act, Endangered Species Act, Marine Mammal Protection Act, Resource Conservation and Recovery Act, Toxic Substances Control Act, U.S. Public Vessel Medical Waste Anti-Dumping Act, and Federal Facility Compliance Act; and Executive Orders 12088, 12114, 12843, 13089, 13101, 13112, 13148, and 13158. Project 0401 supports RDT&E efforts that allow Navy ships and submarines to comply with existing laws, regulations, and policies in four major areas: ozone depleting substances, liquid wastes, solid wastes, and hazardous and other wastes. Project 2210 funds RDT&E requirements that allow Navy compliance with laws, regulations and policies impacting the basing, re-alignment, operation, repair, and replacement of Naval aircraft in four major areas: engine emissions, air vehicle hazardous materials and wastes, ozone depleting substances, and aviation shipboard emissions. Project 0817 funds RDT&E requirements that allow the Navy to develop and validate technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner.

* Project 9204 is a Congressional add in FY05 for an Integrated Marine Mammal Monitoring and Protection System. It becomes a budgeted project in FY06.

** Project 9536 Funds used to determine the causes of increasingly severe anoxic and hypoxic conditions in the Hood Canal in Washington State, the site of the Bangor Submarine Base.

*** Project 9537 Funds, used to research the invasion of foreign species (brown snake) on overseas U. S. territories.

**** In FY07, the requirements and funding of Project 2210 are combined with Project 0817

***** Project 9999 - Congressional Adds \$5.900M

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EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	R-1 Item Nomenclature: PE0603721N / Environmental Protection
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B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 06 Pres Controls)	28.021	21.977	22.373
Current BES/President's Budget:	27.847	27.547	20.271
Total Adjustments	-0.174	5.570	-2.102

Summary of Adjustments

FY05 SBIR Tax	-0.133		
Congressional Undistributed Reductions	-0.005	-0.229	
Department of Energy Transfer	-0.013		
Program Adjustments			-2.195
Execution Adjustments	-0.023		
Rate Adjustments			0.093
Revised Economic Assumptions		-0.101	
Congressional Add		5.900	
Subtotal	-0.174	5.570	-2.102

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection			PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	16.675	8.873	7.079	7.706	8.089	8.146	8.611	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Navy ships and submarines must routinely operate in U.S., international, and foreign waters, and visit numerous U.S. and foreign ports. No body of water is without environmental restrictions that impact the movements and operations of Navy vessels. Environmental requirements tend to be most restrictive in port and in coastal waters, where the Navy's increasing littoral presence places ships and submarines in discharge-restricted waters for longer periods of time. Growing international cooperation in addressing global environmental concerns is resulting in expanding areas of ocean designated as environmentally sensitive, where special prohibitions on ship discharges are imposed. Navy vessels must comply with applicable environmental legal requirements while ensuring continued access to all waters for operations, exercises, training, and port access. The large crews and limited onboard space of Navy ships and submarines severely constrain their ability to hold wastes for return to port for shoreside disposal. This project develops and evaluates shipboard waste processing equipment and systems to enable ships and submarines to manage their wastes in an environmentally-compliant, safe, and operationally-compatible manner. It also addresses afloat environmental issues other than shipboard wastes, e.g., hull antifouling and access to environmental data for planning Fleet operations and exercises that pose significant operational and port entry threats to the Navy Fleet.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Ozone Depleting Substances	1.000	0.100	0.000
RDT&E Articles Quantity			

FY 05: (U) Continued development of solutions for lubrication and engineering design problems in surface ship CFC-114 air-conditioning plant conversion designs.

FY 06: (U) Complete development of solutions for lubrication and engineering design problems in surface ship CFC-114 air-conditioning plant conversion designs.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Integrated Liquid Wastes	5.600	5.300	5.100
RDT&E Articles Quantity			

FY 05: (U) Continued support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continued discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continued development of integrated liquid waste treatment system: continued development of MPCD treatment systems; continued development of shipboard Oil Pollution Abatement System improvements; continued evaluation of commercial non-oily wastewater treatment systems.

FY 06: (U) Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: continue development of MPCD treatment systems; complete development of shipboard Oil Pollution Abatement System improvements; continue evaluation of commercial non-oily wastewater treatment systems.

FY 07: (U) Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development and evaluation of MPCD treatment systems, technologies, and procedures. Continue evaluation of commercial non-oily wastewater treatment systems.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management
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B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Solid Wastes	0.500	0.050	0.000
RDT&E Articles Quantity			

FY 05: (U) Continue evaluation of commercial thermal destruction systems for shipboard solid wastes.

FY 06: (U) Complete evaluation of commercial thermal destruction systems for shipboard solid wastes.

	FY 05	FY 06	FY 07
Hazardous and Other Major Ship Wastes	9.575	3.423	1.979
RDT&E Articles Quantity			

FY 05: (U) Continued shipboard hazardous materials substitution and elimination process and continued test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continued development of marine mammals ship database tracking system: continued demonstration of acoustic modelling; transition to Project 9204 in FY06. Continued development and testing of new low/no-copper underwater hull antifouling coatings. Continued development of underwater hull cleaning system. Continued development of Environmental Information Management System (EIMS).

FY 06: (U) Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continue development and testing of new low/no-copper underwater hull antifouling coatings. Continue development of underwater hull cleaning system. Continue development of Environmental Information Management System (EIMS).

FY 07: (U) Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard surface ships and submarines. Continue development and testing of new low/no-copper underwater hull antifouling coatings. Complete development of underwater hull cleaning system. Complete development of Environmental Information Management System (EIMS).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006																																									
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection			PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management																																										
<p>C. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Line Item No. & Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2005</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2006</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2007</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2011</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>To Complete</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td colspan="10" style="padding-left: 20px;">(U) Demonstrated and validated technologies are transitioned to various SCN, OPN, and O&MN budget accounts for implementation as part of a Fleet modernization program or new ship construction.</td> </tr> <tr> <td colspan="10" style="padding-left: 20px;">(U) Related RDT&E: (U) Defense Research Sciences/Shipboard Processes (PE 61153N / 3162)</td> </tr> <tr> <td colspan="10" style="padding-left: 20px;">(U) Readiness, Training, and Environmental Quality/Logistics and Environmental Quality (PE 62233N)</td> </tr> </tbody> </table> <p style="margin-top: 20px;">D. ACQUISITION STRATEGY:</p> <p style="padding-left: 20px;">(U) RDT&E Contracts are Competitive Procurements.</p>								<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>	(U) Demonstrated and validated technologies are transitioned to various SCN, OPN, and O&MN budget accounts for implementation as part of a Fleet modernization program or new ship construction.										(U) Related RDT&E: (U) Defense Research Sciences/Shipboard Processes (PE 61153N / 3162)										(U) Readiness, Training, and Environmental Quality/Logistics and Environmental Quality (PE 62233N)									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>																																						
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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4				PE0603721N / Environmental Protection				0401 / Shipboard Waste Management						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF	WMTD, Pitts, PA	14.580										14.580	14.580
Primary Hardware Development	C/CPFF	Geo-Centers, Inc,Bos.,MA	24.750			0.600	10/04	0.000		0.000		Cont	Cont	N/A
Primary Hardware Development	SS/CPFF	York Internat'l Corp,York,PA	2.700									N/A	2.700	2.700
Primary Hardware Development	SS/CPFF	York Internat'l Corp,York,PA	11.850										11.850	11.850
Primary Hardware Development	SS/CPFF	N. Res & Eng Corp,Wab.,MA	1.200									N/A	1.200	1.200
Primary Hardware Development	C/CPFF	M. Rosenblatt & Son, NY,NY	10.363									Cont	Cont	N/A
Ancillary Hardware Development	Various	Misc. Contracts	18.384			0.100	Various	0.365		0.300		N/A	N/A	N/A
Primary Hardware Development	C/CPFF	Oceaneering				1.000							1.000	
Ship Integration														0.000
Ship Suitability														0.000
Systems Engineering	C/CPFF	John J. McMullen & Son	4.487			0.000						Cont	Cont	N/A
Training Development														0.000
Licenses														0.000
Tooling														0.000
GFE														0.000
Award Fees														0.000
Subtotal Product Development			88.314	0.000		1.700		0.365		0.300		Cont	Cont	N/A
Remarks: (1) Hardware Development and Systems Engineering Tasks use CPFF Delivery Contracts for Continuing Development of Pollution Abatement Hardware and Ship Systems Engineering Analysis.														
Development Support														0.000
Software Development	WR	SPAWARS, Charleston, SC	8.038			1.800	10/04	1.000		0.000		0.000	10.838	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			8.038	0.000		1.800		1.000		0.000		0.000	10.838	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE0603721N / Environmental Protection				0401 / Shipboard Waste Management							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD	141.524			6.500	10/04	4.000		4.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	NRL,Wash,DC	27.982			0.700	10/04	0.500		0.400		Cont	Cont	N/A
Developmental Test & Evaluation	WR	SPAWARSYSCEN,SD,CA	10.070			1.000	10/04	0.500		0.200		Cont	Cont	N/A
Process Control Engineering	C/CPFF	GSA/BAH, Arlington, VA	12.322									Cont	Cont	N/A
Developmental Test & Evaluation	WR	Misc. Govt Labs	22.732			0.100	Various	0.000		0.000		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	Geo-Centers, Inc.Bos.,MA	14.251			0.400	04/05	0.600		0.500		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	York Internat'l Corp,York,PA	12.000									0.000	12.000	12.000
Developmental Test & Evaluation	C/CPFF	Misc. Contracts	12.052			0.222	Various	0.388		0.159		Cont	Cont	N/A
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons	0.000			1.500	04/05	1.500		1.500				3.000
Developmental Test & Evaluation	PD	ONR, Arlington, VA	0.000			0.400	03/05							0.400
Developmental Test & Evaluation	WR	Naval Postgraduate School	0.000			1.800	03/05							1.800
Process Control Engineering	MIPR	EPA, Hdqtrs				0.400	01/05							0.400
GFE														0.000
Award Fees														0.000
Subtotal T&E			252.933	0.000		13.022		7.488		6.759		0.000	Cont	N/A
Remarks:														
Contractor Engineering Support														0.000
Government Engineering Support														0.000
Program Management Support														0.000
Travel			0.210			0.020		0.020		0.020				Cont
Labor (Research Personnel)														0.000
SBIR Assessment						0.133								0.133
Subtotal Management			0.210	0.000		0.153		0.020		0.020		0.000	Cont	
Remarks:														
Total Cost			349.495	0.000		16.675		8.873		7.079		Cont	Cont	Cont
Remarks:														

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EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME													
RDT&E, N / BA-4					PE0603721N / Environmental Protection										0401 / Shipboard Waste Management													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Ozone Depleting Substances																												
Lubrication and Engineering Problems for HFC-236fa Air-Conditioning Plants																												
Integrated Liquid Wastes																												
Uniform National Discharge Standards (UNDS) Rulemaking																												
Develop & Evaluate Marine Pollution Control Device Systems & Technologies																												
Oil Pollution Abatement (OPA) System Improvements																												
Evaluate Commercial Non-Oily Wastewater Treatment Systems																												
Solid Wastes																												
Evaluate Commercial Thermal Destruction Systems																												
Hazardous and Other Major Ship Wastes																												
Hazardous Materials and Pollution Prevention																												
Protected Marine Animals																												
Low/No-Copper Hull Antifouling Coatings																												
Underwater Hull Cleaning System																												
Environmental Information Management System (EIMS)																												

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603721N, ENVIRONMENTAL PROTECTION			PROJECT NUMBER AND NAME 2210, ENVIRONMENTAL COMPLIANCE			
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
2210 ENVIRONMENTAL COMPLIANCE			0.745	0.828				
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification: This project supports development and implementation of technologies which will lead to environmentally safe naval aviation operations and support; compliance with international, federal, state, and local regulations and policies; reduction of increasing compliance costs and personal liability; and enhancement of naval aviation mission readiness and effectiveness. This project will support aviation compliance and pollution prevention technologies as well as additional operational and shipboard aviation requirements previously unsupported. Specific regulatory requirements include Executive Orders 12873 (Recycling & Waste Prevention), and 13148, the National Environmental Policy Act (NEPA), Clean Air Act (CAA) Title I, National Ambient Air Quality Standards (NAAQS), relating to pollutants aircraft contribute to base air emission limits (volatile organic compounds (VOCs), particulate matter (PM), oxides of nitrogen (NOx), oxides of sulfur (SOx), and unburned hydrocarbons (UHCs)), the National Emission Standards for Hazardous Air Pollutants (NESHAPs), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), as well as Occupational, Safety and Health Administration (OSHA) standards. Funding is realigned from RDT&E 2210 to 0817 in beginning in Fiscal Year 2007.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	PROGRAM ELEMENT NUMBER AND NAME 0603721N, ENVIRONMENTAL PROTECTION	PROJECT NUMBER AND NAME 2210, ENVIRONMENTAL COMPLIANCE
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B. Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.507	0.552	

Engine Emissions Technology:
 Research, develop and test low emissions technology for gas turbine engines. Objectives include test, demonstrate and validate jet fuel additives for pollution prevention and compliance, gas turbine engine particulate matter measurement and testing technology, low emissions combustor technology, aircraft source noise modeling and mitigation technologies.

		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.238	0.276	

Aircraft Hazardous Materials and Shipboard Waste Reduction:
 Research, develop and test alternatives to aircraft and propulsion and power systems manufacture, finishing and repair processes that generate toxic heavy metals, hazardous air pollutants (HAPs) and volatile organic compounds (VOCs). Objectives include the test, demonstration and validation of aircraft structural stainless steels, long life lead and cadmium free aircraft batteries and shipboard validation of corrosion and composite repair kits, environmentally compliant cleaners, coatings and coatings maintenance technologies repair kits.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603721N, ENVIRONMENTAL PROTECTION	PROJECT NUMBER AND NAME 2210, ENVIRONMENTAL COMPLIANCE
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C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0603851D (Environmental Security Technology Certification Program)	0.75								0.75

D. ACQUISITION STRATEGY:

Technologies developed under this project are demonstrated and validated primarily through competitive procurements. Validated technology is transitioned to users through new or revised performance specifications, technical manuals or competitive procurements of subsystems, materials or processes.

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603721N, ENVIRONMENTAL PROTECTION			2210, ENVIRONMENTAL COMPLIANCE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												0.000
Ancillary Hardware Development												0.000
Aircraft Integration												0.000
Ship Integration												0.000
Ship Suitability												0.000
Systems Engineering	TBD	NAWCAD, Pax River, MD	0.405	0.507	10/04	0.552	10/05					1.477
Training Development												0.000
Licenses												0.000
Tooling												0.000
GFE												0.000
Award Fees												0.000
Subtotal Product Development			0.405	0.507		0.552		0.000		0.000		1.477
Remarks:												
Development Support												0.000
Software Development												0.000
Integrated Logistics Support												0.000
Configuration Management												0.000
Technical Data												0.000
Studies & Analyses												0.000
GFE												0.000
Award Fees												0.000
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603721N, ENVIRONMENTAL PROTECTION			2210, ENVIRONMENTAL COMPLIANCE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												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	WX	NAWCAD, Patuxent River MD	0.338	0.238	10/05	0.276	10/05					0.852
Travel												0.000
Transportation												0.000
SBIR Assessment												0.000
Subtotal Management			0.338	0.238		0.276		0.000		0.000		0.852
Remarks:												
Total Cost			0.743	0.745		0.828		0.000		0.000		2.316
Remarks:												

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection			PROJECT NUMBER AND NAME 0817 / Pollution Abatement			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		6.803	7.478	8.929	9.276	9.110	9.646	9.603
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(U) Inherent to the realization of the vision outlined in Sea Power 21 are certain environmental consequences that will, to a lesser or greater degree, impact on the Navy's ability to fully achieve the strategy outlined in the Navy Capability Pillars (NCP) SEA SHIELD, SEA STRIKE, SEA BASING and FORCEnet and the supporting initiatives of SEA WARRIOR, SEA TRIAL and SEA ENTERPRISE. Readiness and training are primary considerations for determining whether any fighting force is at its peak proficiency. The ability to train our forces in a realistic environment is paramount. Today's reality requires training and operating within environmental constraints (national and international laws and agreements), and searching for alternatives to comply with and alleviate those constraints. Moreover, as we develop new systems and technologies in support of Sea Power 21, the Navy must anticipate potential environmental regulations which, while not currently an issue, could in the future adversely impact our ability to project and sustain our forces at home and abroad.</p> <p>This program identifies pervasive Navy shoreside environmental requirements and develops and validates information, new processes, and technologies that address requirements that pose significant impact on Naval shore activities in complying with environmental laws, regulations, orders, and policies. The goal of the program is to maximize opportunities for significant cost savings while minimizing personnel liabilities, operational costs, and regulatory oversight while preserving or enhancing the ability of Naval shore activities to accomplish their required missions and functions in support of the Navy's transformational strategy. Program investments supports 4 of 5 Environmental Enabling Capabilities (EEC-2 though 5) that are required to meet the objectives of Sea Power 21 as detailed in the POM06 Integrated Navy Environmental Readiness Capability Assessment for S&T and DT&E.</p> <p>(U) EEC-2 MAXIMIZE TRAINING AND TESTING RANGE REQUIREMENTS WITHIN ENVIRONMENTAL CONSTRAINTS</p> <p>(U) This capability addresses environmental impacts and restrictions at Navy land and sea ranges, including munitions testing and manufacturing, to ensure Navy ranges are available to conduct required training and testing operations for the Fleet. Investments in EEC-2 provide validated knowledge, models, and process to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. The results support operational readiness by providing the tools and technologies necessary for sustaining and managing Navy land and sea ranges related to UXO and munitions, encroachment, air quality, airborne noise, water quality, and wetlands. Capabilities gained include the ability to assess and determine the risks from underwater UXO, the evaluation and prioritization ordnance contaminated sites for evaluation in environmental programs, and the implementation of range specific best management practices by evaluating and modeling available process, procedures, and technologies.</p> <p>Funding was realigned from RDT&E 2210 to 0817 beginning in FY07.</p>								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
<p>(U) EEC-3 PLATFORM MAINTENANCE AND REPAIR WITH MINIMAL ENVIRONMENTAL FOOTPRINT</p> <p>(U) This capability focuses on minimizing or to eliminate environmental impact related to Navy and Marine Corps weapon system O, I, and D level repair and maintenance operations. Investments in EEC-3 provide valid knowledge, models, process, and technologies to minimize regulated emissions, discharges and hazardous material usage during the repair and maintenance of ships, submarines, and surface/sub-surface vehicles (EEC-3a) and aircraft and air vehicles (EEC-3b). The program supports Fleet operational readiness and Navy acquisition communities by investing in information to understand emerging environmental requirements and to develop innovative processes and technologies that result in savings while reducing the fleet environmental constraints related to platform maintenance. Capabilities and benefits gained include, but are not limited to, the reduction in the usage of heavy metals used in metal finishing (chromium and cadmium), reduced hazardous air pollutant (HAP) emissions, and the development of best management practices and tools to minimize the use of hazardous materials and the generation of hazardous wastes associated with maintaining and repairing ships, submarines and aircraft and unmanned vehicles. Results of program investments will be leveraged across weapon system and platform acquisition to ensure continued reduction in lifecycle costs and long-term environmental compliance burdens to the Fleet.</p> <p>(U) EEC-4. SUPPORT SHORE READINESS WITHIN ENVIRONMENTAL CONSTRAINTS</p> <p>(U) Naval shore establishment requires the capability to operate and maintain facilities and provide waterfront (ship-to-shore interface) and airfield services to the fleet while complying with applicable environmental regulations and minimizing environmental impacts and costs. The program invests in knowledge and innovative processes and technologies that maximize infrastructure and operational costs while minimizing regulated emissions, discharges and hazardous material usage from ship (waterfront) and aviation operations. Capabilities and benefits gained under EEC-4 include reduced costs associated with wastewater treatment, elimination/reduction in the use of HAPs/ODS/VOCs and the associated reporting requirements, reduced hazardous waste and disposal costs, and improved storm water management.</p> <p>((U) EEC-5. COST-EFFECTIVE MANAGEMENT OF ENVIRONMENTAL REGULATORY REQUIREMENTS</p> <p>(U) The environmental compliance regulations require base managers to permit, monitor and report on many processes associated with weapon system and platform operations. Naval shore environmental managers require the capability to efficiently and costs effectively manage these compliance requirements. Under EEC-5, the program invests in improved data collection, methods, and models to assess environmental impacts and ecological risk assessments of Naval operations on harbors, US waterways, and surrounding communities. Benefits include gaining standardized technical environmental management improvements/techniques related to source control, assessment, and monitoring. EEC-5 also provides validated knowledge, models, processes and technologies to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.</p>		

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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B. Accomplishments/Planned Program - EEC-2 Maximize Training and Testing Range Requirements Within Environmental Constraints

	FY 05	FY 06	FY 07
Maximize Training and Testing Requirements Within Environmental Constraints	1.578	1.687	2.359
RDT&E Articles Quantity			

FY 05: The tasks in this EEC support the requirements for addressing the transport, fate, and effects of underwater UXO needed to support scientifically valid decisions. Toxicity and Degradation Study of Ordnance in Marine Sediments and Waters will allow determine the applicability of existing fresh-water data and allow for the development of a comprehensive data set regarding the degradation rates, adsorption coefficients and solubility of munitions constituents in marine water and sediments. Localized corrosion tests will determine the corrosion scenarios associated with ordnance underwater. UXO Transport Evaluations will determine the physical transport mechanisms associated with underwater ordnance items for use in developing an Underwater UXO Risk Assessment Model. Development of a comprehensive data set on toxicity of munitions constituents to regulatory acceptable marine species will define potential bioaccumulation, cellular level impacts, and trophic transfer. The toxicity analysis of TNT in water and sediment exposures and the toxicity of RDX and HMX in water exposures will be defined. The confined burn facility open burning replacement project will provide an environmentally acceptable alternative for implementation at Navy/DOD open burning sites. The analysis of the long term disposition of seafloor cables will identify cable impacts to the marine environments aiding the sustainment and management of Navy underwater ranges and support new underwater surveillance systems that require the laying of seafloor hardware and cables. Development of a range residue management tool will provide range managers with the capability to project range residue management and manage processing costs based on what if scenarios allowing managers to implement range specific best management practices. The development of the dataset necessary to calculate ecological soil screen levels (Eco-SSL) for munitions and explosive related chemicals will allow the Navy to better assess the potential for adverse effects at sites where soil contamination due to munitions or explosive constituents is a concern.

FY06: Continue providing validated knowledge, models, and process to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges. Continuing efforts include the analysis into the environmental effects of underwater UXO in order to give the Navy the ability to assess and determine risks from underwater UXO and development of range residue management tools ensure continued operation at Navy testing and training ranges.

FY07: Continue providing validated knowledge, models, and process to mitigate environmental impacts, restrictions, and costs at Navy training and test range to maximize the availability and utilization of the ranges.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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B. Accomplishments/Planned Program (Cont.) - EEC-3a Platform Repair & Maintenance with Minimal Environmental Impact - Ships

	FY 05	FY 06	FY 07
Ship Maintenance	1.208	1.286	1.521
RDT&E Articles Quantity			

FY 05: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships and submarines. Liquid crystal polymer (LCP) alternative for metal working (cutting) fluid will demonstrate the environmental and economic advantages of using LCP as a metal working fluid in place of straight oil or conventional oil-water emulsions by reducing the fluid procurement and disposal costs and lowering the operation and maintenance costs. Analysis on acid recycle systems for pipe flushing wastes will identify technology alternatives and allow selection of a candidate system as a pierside integrated system to recycle and reuse of acid/heavy metal wastewater generated in submarine and surface ship pipe flushing operations and submarine missile tube cleaning. The development of an automated convergent spray process for non-skid coatings using 100% solid non-skid coating system will eliminate volatile organic compounds emissions during the application of non-skid on Navy vessels. Dry dock best management practices tool will assist naval shipyards, naval stations, and submarine bases in meeting the copper discharge standards for NPDES and Stormwater discharges. Alternative solvents demonstrations for ship maintenance operations will be conducted to allow development of a decision tool to standardize the approach to HM avoidance across ship and shore activities and identify alternatives for NAVSEA targeted chemicals.

FY06: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships and submarines. Development of dry dock best management practices and decision selection tool assisting naval shipyards, stations and bases in meeting the copper discharge standards will continue. Alternative solvents demonstrations for ship maintenance operations and identification of alternatives for NAVSEA targeted chemicals will continue. Acid recycle system for shipboard seawater heat exchanger pipe flushing wastes will be completed. Convergent spray process for non-skid coatings systems will be completed.

FY07: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships and submarines.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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B. Accomplishments/Planned Program (Cont.) - EEC-3b Platform Repair & Maintenance with Minimal Environmental Impact - Aviation

	FY 05	FY 06	FY 07
Aviation Maintenance	1.274	1.460	2.661
RDT&E Articles Quantity			

FY 05: Tasks included on-going shoreside efforts transferred from Project 2210 to Project 0817. Continued and completed legacy 2210 aircraft maintenance projects. Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of aircraft. Material and component testing will validate high velocity oxygen fuel (HVOF) thermal spray coatings as a cost-effective and technologically superior alternative to the current hard chrome plating used on helicopter dynamic components. The use of HVOF coatings will result a significant reduction in worker exposure to carcinogenic hexavalent chromium and increase service life of components. Thin film sulfuric acid anodizing (TFSA) with non-chromated sealers as an alternative to chrome acid anodizing will be evaluated to help the Navy meet the requirements of EO 13148 that requires a 50% reduction in use of hexavalent chromium by 31 Dec. 2006. Zinc-nickel plating will be demonstrated as an acceptable replacement for cadmium plated repairs as a touch-up applications for high-strength steels. This results in the reduction hexavalent chrome used by the Navy. Advanced sealant technologies to replace chromated sealants on static wicks, antennas, floorboards, and windscreen sills with non-hazardous sealants and gaskets will be demonstrated. Validation of a PMB technology to remove coke deposits from the F404 engine drive shaft will result in the elimination the use of MIL-C-85704, a hazardous air pollutant, used to chemical strip the coke deposits, thereby minimizing a chemical waste stream, reducing record keeping and reducing hazardous material usage. The demonstration of a sustainable integrated maintenance concept facility that is specifically designed for containing will validate a method of controlling hazardous materials/wastes generated from corrosion control maintenance. A suitable substitutes for polystyrene/polyester resins and chemical strippers used during repairs to radome will be demonstrated. A demonstration and validation of an autonomous process control system that will filter, monitor, add/change solution and remotely monitor tank solutions in a rinse bath used cleaning shops that will result in an increase in environmental compliance for waste stream reduction while improving product quality. A fuel leak detection project will eliminate the use of Freon, a hazardous ODS, to detect fuel leaks on P-3s.

FY 06: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of aircraft. Zinc-nickel plating alternative for cadmium plated repairs demonstration will be concluding. The demonstration of suitable substitutes for polystyrene/polyester resins and chemical strippers used during repairs to radome will be completed.

FY 07: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of aircraft. Beginning in FY07 the requirements under Project 2210 requirements were rebaselined to Project 0817, Pollution Abatement Ashore. These projects support development and implementation of technologies which will lead to environmentally safe naval aviation operations and support; compliance with international, federal, state, and local regulation and policies; reduction of increasing compliance costs and personal liability; and enhancement of naval aviation mission readiness and effectiveness.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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B. Accomplishments/Planned Program (Cont.) - EEC-4 Support Shore Readiness within Environmental Constraints

	FY 05	FY 06	FY 07
Support Shore Readiness within Environmental Constraints	1.142	1.499	1.582
RDT&E Articles Quantity			

FY 05: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support (ship-to-shore interface), aviation support, and other base operations. The validation of manufacture's claims that their products stabilized lead in removed lead based paint (LBP) thereby preventing leaching when landfilled would allow the Navy to dispose of the removed LBP as a non-hazardous waste. The validation that the organics found in solvent based paints, used aboard Navy vessels, can easily be degraded by microorganisms will lead to a significant cost savings and reduction of off-site hazardous waste transfer and disposal. The demonstration and validation of Improved BMPs- Stormwater Treatment Technology will enhance the management of stormwater run-off and reduce cost while addressing Navy unique requirements ensuring compliance with stormwater discharge regulations. The development and demonstration of a zinc removal filter for treating collected Compwater will reduce disposal and operation costs and preserve the capability to refuel Naval vessels in port. Optimization of oil-change intervals for DOD vehicles by developing onsite condition monitoring system and implementing better petroleum, oil, and lubricant (POL) products will reduce HW generation and storage and disposal liabilities, reduce labor, material (oil & filter), and disposal costs, increase engine life by ensuring better engine oil quality, predict engine condition and repairs, and improve vehicle reliability and readiness. The identification and qualification of alternative "state of the art" green designer solvents for use in Navy maintenance activity will allow the replacement of cleaners that contain VOCs and HAPs. This will eliminate the use of chemical that are required to be reported under TRI reporting requirements, and minimize costs associated with cleaning operations by reducing environmental compliance costs. The validation of NoFoam systems for AFFF fire suppression tests will eliminate the generation of AFFF wastewater which is of an environmental concern because of high biological oxygen demand (BOD), chemical oxygen demand (COD), extreme foaming action, and which contains perfluoro-octanyl sulfonate (a toxic bioaccumulating compound that does not readily biodegrade). The development of a wastewater treatment system to collect and treat the waste stream for vertical launch missile tubes will improve submarine readiness while reducing the release of hazardous wastes to the environment. An investigation into the feasibility of the onshore treatment of ballast water to control the introduction of aquatic invasive species will provide an assessment tool to manage invasive species and minimize open-water ballast water exchanges.

FY06: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Continue selected demonstrations of alternative solvents for industrial operations. Continue demonstration of NoFoam system for fire fighting pumper trucks. Initiate effort to determine strategy for use of compliant diesel engines.

FY07: Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. Efficiencies related to aligning the program to the priorities of SEAPOWER 21 and focusing on addressing the fleets high priority needs have resulted in cost saving starting in FY07 and investments in process related to general base operation that are not associated with waterfront or aviation support is ended.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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B. Accomplishments/Planned Program (Cont.) - EEC-5 Cost-Effective Management of Environmental Regulatory Requirements

	FY 05	FY 06	FY 07
Coastal Contamination and Contaminated Sediments	1.601	1.546	0.806
RDT&E Articles Quantity			

FY 05: Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. The development of a Navy TMDL technical strategy will provide Navy shore commanders and activities, along with the Navy Watershed/TMDL Workgroup, a guidance document and a case study that establishes a technical approach for developing Total Maximum Daily Loads (TMDLs) in a cost-effective and scientifically defensible manner allowing better decision making by managers. Development NPS runoff export coefficients for Navy industrial facilities and ranges allow Navy facilities to easily assess the magnitude of their NPS pollutant loadings and the impact on receiving water bodies. This would help the Navy facilities in their negotiation with regulators regarding stormwater compliance and developing their TMDLs. The identification, review, and demonstration of sediment transport methods and tools that assess physical stability and natural recovery potential at contaminated sediment sites will provide a defined framework that can be used by program mangers an their technical staff to clearly understand the kind of measurements needed at sites and how those measurements can be used to develop management decisions at contaminated sediment sites. The information and data produced by this project will facilitate the identification and use of appropriate and cost-effective technologies and methods for characterizing the behavior of sediment-bound contaminants. This in turn will result in more complete site characterizations, improved evaluation and selection of sediment remedial alternatives in the FS, and potentially more cost-effective cleanups. The results will also facilitate the implementation of more effective long-term monitoring programs for sediment sites. The development of an automated process of capturing radar imagery through the BirdRad unit and transferring the near real-time bird sightings against a backdrop of historical NEXRAD data, base topography, facility maps, and available bird migration patterns aid natural resource managers in monitoring bird activities in and around airfields reducing the cost and saving lives resulting from aircraft striking birds.

FY 06: Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, and reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Continue developing containment and monitoring strategies for contaminated sediments. Continue effort developing non-point source runoff coefficients. Initiate contaminant mobility for in situ treatment technologies. Demonstrate the benefits of automated reporting of toxic emissions. Initiate task for improves sensors for environmental monitoring.

FY07: Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, an to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Efficiencies related to aligning the program to the priorities of SEAPOWER 21 and focusing on addressing the fleets high priority needs have resulted in cost saving starting in FY07 and investments in assessment and risk based management of contaminated sediments not associated with range sustainability is concluded in FY07.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0817 / Pollution Abatement
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C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
<p>(U) P-1 Procurement Line Item No. & Name. Not Applicable. (U) C-1 MILCON Project No. & Name. Not Applicable. (U) RELATED RDT&E: This project transitions shoreside pollution abatement technologies from two Navy Science and Technology programs and the Strategic Environmental Research and Development Program (SERDP). Project funding is leveraged by transitioning technologies to the Environmental Security Technology Certification Program (ESTCP) for final certification and by providing funding for Navy participation in ESTCP projects. Execution of this project is coordinated with related Marine Corps, Army, Air Force and NASA programs through direct coordination and active participation in the Joint Group for Pollution Prevention (JG-PP).</p> <p>(U) PE 0602233N, Readiness, Training, and Environmental Quality Technology Development (U) PE 0603716D, Strategic Environmental Research & Development Program (SERDP) (U) PE 0603851D, Environmental Security Technology Certification Program (ESTCP)</p>									

D. ACQUISITION STRATEGY:

(U) This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for Naval stations and other mission funded activities costing over 100K are often procured centrally through the Navy Pollution Prevention Equipment Program (PPEP) where as equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over 100K are procured through their Capital Purchases Program (CPP). For both types of activities, equipment products costing less than 100K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all the critical stakeholders: 1) Navy end user; 2) Funding sponsor for the Navy end user; 3) Cognizant environmental federal, state, and local regulators; 4) Other stakeholders with cognizance over the Navy process or operation being changed, and 5) The private or government organization that will produce the product.

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE0603721N / Environmental Protection				0817 / Pollution Abatement							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
EEC 2	WR/PO	NFESC	0.222			1.326	varies	1.160	varies	1.789	varies	Continuing	Continuing	N/A
EEC 2	WR/PO	SSC/SD				0.252	varies	0.527	varies	0.570	varies	Continuing	Continuing	N/A
EEC 2	WR/PO	NSWC/IH	15.666			0.000		0.000		0.000		0.000	15.766	N/A
EEC 3a	WR/PO	NSWC/CD	10.582			0.277	varies	0.500	varies	0.800	varies	Continuing	Continuing	N/A
EEC3a	WR/PO	NFESC	5.040			0.931	varies	0.786	varies	0.721	varies	Continuing	Continuing	N/A
EEC 3b	WR/PO	NAWC PAX				0.815	varies	0.850	varies	1.750	varies	Continuing	Continuing	N/A
EEC 3b	WR/PO	NFESC				0.459	varies	0.610	varies	0.911	varies	Continuing	Continuing	N/A
EEC4	WR/PO	NFESC	16.558			1.142	varies	1.499		1.582	varies	Continuing	Continuing	N/A
EEC 5	WR/PO	SSC/SD	1.842			0.793	varies	0.543	varies	0.180	varies	Continuing	Continuing	N/A
EEC 5	WR/PO	NFESC	2.123			0.808	varies	1.003	varies	0.626	varies	Continuing	Continuing	N/A
Subtotal Product Development			52.033	0.000		6.803		7.478		8.929				
Remarks: (U) Performing Activities: Naval Surface Warfare Center, Carderock Division (NSWC/CD), Naval Facilities Engineering Service Center (NFESC), Naval Surface Warfare Center, Indian Head Division (NSWC/IH), Space and Warfare Systems Center, San Diego (SSC/SC), Naval Research Laboratory (NRL), Naval Air Warfare Center, Patuxent River (NAWCD PAX) (U) Total Prior Years Cost: Summation starts with FY80. Subtotal does not include performing activities from prior years that are no longer performing activities. (U) Award Dates: About 55% of the project is executed via contracts awarded by the performing activities.														
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	0.000	
Remarks: (U) Included in Product Development costs.														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4				PE0603721N / Environmental Protection				0817 / Pollution Abatement						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													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	0.000	
Remarks: Not applicable.														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support													0.000	
Travel													0.000	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.														
Total Cost			52.033	0.000		6.803		7.478		8.929		0.000		
Remarks:														

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EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4					PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection								PROJECT NUMBER AND NAME 0817 / Pollution Abatement															
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
EEC 2: Maximize training and Testing Requirements within Environmental Constraints	[REDACTED]																											
EEC 3a: Platform Repair and Maintenance with Minimal Environmental Impact - Ships	[REDACTED]																											
EEC 3b: Platform Repair and Maintenance with Minimal Environmental Impact - Aviation	[REDACTED]																											
EEC 4: Support Shore Readiness within Environmental Constraints	[REDACTED]																											
EEC 5: Coast Effective Management of Environmental Regulatory Requirements	[REDACTED]																											

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection			PROJECT NUMBER AND NAME 9204 / Marine Mammal Research			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		2.028	4.468	4.263	4.319	4.356	4.400	4.451
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) The Navy has been and will continue to be subject to litigation with regard to the potential injuring and killing of marine animals by the use of intense underwater sound. Since Fleet operation and training areas coincide with known or probable marine mammal habitats, migration routes, or breeding areas, the possibility exists that such incidents are likely to continue in the future. The increasing public interest and pressure has resulted in escalating Fleet costs. For example, Fleet and SYSCOM development activities have been interrupted, modified, or altogether cancelled and environmental regulations have, among other things, required new ship construction shock trials to obtain Federal permits and conduct extensive environmental planning that can take several years to complete. The incorporation of mitigation measures in Fleet training operations to minimize the potential adverse effects on protected marine animals can significantly reduce the realism of these operations. In addition, the testing, evaluation, and deployment of new sonar detection and monitoring systems that use active acoustics are under severe public scrutiny for their potential adverse effects on whales and other marine animals. Navy needs scientific evidence to substantiate its claims of limited or inconsequential adverse effects to marine life from operations.

(U) This program primarily focuses on the development of planning and monitoring tools to aid the Fleet in minimizing contact with and the potential harassment of protected marine animals during operations, exercises, training, and undersea surveillance and weapons testing. These new capabilities will encompass historical and newly acquired data and analytical models that together can predict marine animal habitats (where they are likely to be) and their natural and expected behavior (diving patterns, prey localization, calling activity, etc.).

(U) Accurate and timely monitoring and predicting the movement of whales and other protected marine animals plus an enhanced knowledge of how marine animals may react to Fleet activities (e.g., hearing and behavioral effects) will reduce Navy interaction with these animals; minimize the risk that legally-imposed monitoring and avoidance measures will adversely affect Fleet operations and exercises; minimize the substantial costs associated with operations, exercises, and tests that have to be modified or curtailed as a result of concerns about protected marine animals; and will reduce the likelihood of litigation related to actual or anticipated compliance problems with protected animals.

This project is a Congressional add in FY05 for an Integrated Marine Mammal Monitoring and Protection System. It becomes a budgeted project in FY06.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 9204 / Marine Mammal Research
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Marine Mammal Location, Abundance and Movement	0.000	1.980	1.818

FY 06: (U) Initiate investigation in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys.

FY 07: (U) Continue investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys.

	FY 05	FY 06	FY 07
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	0.000	0.975	0.861

FY 06: (U) Initiate investigation in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops.

FY 07: (U) Continue investigations in criteria and thresholds, physiology and behavior, and effects of sound through hearing sensitivity; temporary threshold shift (TTS)/Sub-TTS; physical injury models; cumulative effects of sound and/or multiple events; effects of sound on the marine mammal habitat; and workshops.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 9204 / Marine Mammal Research
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B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	0.000	1.350	1.351

FY 06: (U) Initiate mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness.

FY 07: (U) Continue mitigation methodologies for monitoring, new technology and risk assessment through passive acoustic monitoring; active acoustic monitoring; improved tag development; alternative monitoring; defining risk assessment variables; model risk assessment and determine mitigation effectiveness.

	FY 05	FY 06	FY 07
Acoustic Source Propagation	0.000	0.163	0.233

FY 06: (U) Initiate investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.

FY 07: (U) Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.

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EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 9204 / Marine Mammal Research
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C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
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(U) Related RDT&E: (U) Office of Naval Research (PE 601153 / PE 602435 / PE 602782 / PE 603235)
(U) Strategic Environmental Research & Development Program (SERDP)
(U) National Oceanographic Partnership Program (NOPP)

D. ACQUISITION STRATEGY:

(U) RDT&E Contracts are Competitive Procurements.

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE0603721N / Environmental Protection				9204 / Marine Mammal Research							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Primary Hardware Development														
Primary Hardware Development														
Primary Hardware Development														
Primary Hardware Development														
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Ship Integration														
Ship Suitability														
Systems Engineering														
Training Development														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000				
Remarks:														
Development Support														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Award Fees														
Subtotal Support			0.000	0.000		0.000		0.000		0.000				
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE0603721N / Environmental Protection				9204 / Marine Mammal Research							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Misc. Govt Labs/Misc Contr						2.468		2.263				
Developmental Test & Evaluation	PD	NPGS, Monterey, CA						2.000		2.000				
Developmental Test & Evaluation														
Process Control Engineering														
Developmental Test & Evaluation														
Developmental Test & Evaluation														
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		4.468		4.263				
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.000	0.000		0.000		0.000		0.000				
Remarks:														
Total Cost			0.000	0.000		0.000		4.468		4.263				
Remarks:														

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EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4					PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection										PROJECT NUMBER AND NAME 9204 / Marine Mammal Research													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Marine Mammal Location, Abundance, and Movement																												
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound																												
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment																												
Acoustic Source Propagation																												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9537C				
Invasive Species Eradication Program	0.500			

(U) Prevent brown tree snake (BTS) from reaching other topical islands and the United States Mainland by reducing BTS populations around Navy cargo and port facilities. The brown tree snake (BTS), a non-native, invasive species on the island of Guam, has caused severe economic and environmental problems and public health concerns for the island's residents and industries. The BTS has eliminated most of Guam's native forest birds and lizards. This dramatic wide-scale destruction of native species is unprecedented in modern ecological history. Snakes contacting electric power transmission lines have caused frequent power outages, resulting in millions of dollars in damage and lost revenue. Livestock producers have suffered losses from snakes preying on poultry and other small animals. Children and people sensitive to the snake's mild venom are threatened by the large number of snakes inhabiting urbanized areas on the island. Even more significantly, BTS originating from Guam have been found throughout the Pacific region, associated with outbound commercial and military air and sea cargo. The abundance of snakes on Guam, coupled with the tendency of the BTS to hide in cargo, create a significant threat to the biodiversity and economic security of the tropical Pacific.

	FY 06			
9765N				
Coatings and Polymeric Films Development for Naval Applications	2.100			

(U) This Congressional Add is a continuation of a Congressional Add previously managed by ONR. This effort will involve the development of coatings and polymeric films from bio-based polymers for application to Naval vessels.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups: VARIOUS
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CONGRESSIONAL PLUS-UPS:

	FY 06			
9766N				
Integrated Marine Mammal Monitoring and Protection System	1.500			

(U) This Congressional Add is a continuation of Congressional Add Project 9204. This effort involves the development and testing of an Integrated Marine Mammal Monitoring and Protection System (IMAPS), which integrates an Active/Passive Sonar System with the Mitigation Management and Control Module (MMCM). The active/passive acoustic system will act as the primary detection method, while the MMCM will act to optimize the functional settings of the active/passive system to maximize the probability of detection of marine mammals for the given operation. This system will be evaluated for its ability to track Grey Whales and other mammals of special interest to the Navy.

	FY 06			
9768N				
Puget Sound Anoxic Research	1.800			

(U) This Congressional Add is a continuation of Congressional Add Project 9536. This effort will involve the monitoring of the oxygen content of the water in Hood Canal and streams throughout the watershed and will increase understanding of the long-term effects of low-oxygen levels on sealife. The monitoring information will be used to develop a mathematical model of Hood Canal. The model will be used to evaluate the effect of different potential sources of input to Hood Canal that might account for an existing anoxic condition.

APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /						R-1 ITEM NOMENCLATURE 0603724N, NAVY ENERGY PROGRAM			
BA 4									
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011		
Total PE Cost	7.510	8.521	1.600	1.586	1.750	1.801	1.857		
0838 NAVY MOBILITY FUELS, CLAIMANT NAVAIR	1.434	1.571	1.600	1.586	1.750	1.801	1.857		
2868 PROTON EXCHANGE MEMBRANE FUEL CELLS	2.701								
9498 MEGAWATT MOLTEN CARBONATE FUEL CELL	3.375								
9999 CONGRESSIONAL ADDS		6.950							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

0838/Mobility Fuels - This program supports projects to evaluate, adapt, and demonstrate energy related technologies for Navy aircraft and ship operations to: (a) increase fuel-related weapons systems capabilities such as range and time on station; (b) reduce energy costs; (c) apply energy technologies that improve environmental compliance; (d) relax restrictive fuel specification requirements to reduce cost and increase availability worldwide; (e) provide guidance to fleet operators for the safe use of commercial grade or off-specification fuels when military specification fuels are unavailable or in short supply; and make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems. This program supports the achievement of legislated, White house, Department of Defense, and Navy Energy Management Goals. It also responds to direction from the Office of the Secretary of Defense, the Secretary of the Navy, and the Chief of Naval Operations to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure.

2868/Proton Exchange Membrane Fuel Cells - This is a Congressional add. Manufacture 12 Proton Exchange Membrane (PEM) Fuel Cell systems, install at Navy facility in Hawaii to be determined (TBD), operate for 12 months, collect and report performance data, remove systems and return sites to original condition. The purpose of the field test is to demonstrate the reliability and life of PEM fuel cell system that incorporate an advanced membrane electrode assembly that enhances producibility, performance, and reduces cost. The military requirement addressed is the facility requirement for electrical power and the need to find alternative, affordable energy sources.

9498/Megawatt (MW) Molten Carbonate Fuel Cell Demo - This is a Congressional add. Design and manufacture one 1 MW molten carbonate fuel cell and install at a Navy facility in California TBD, operate 12 months, collect and report performance data. The purpose of the field test is to demonstrate the feasibility of the molten carbonate fuel cell to interface with the associated power electronics for electrical connection and provide reliable electrical power. The military requirement addressed is the facility requirement for electrical power and the need to find alternative affordable energy sources.

EXHIBIT R-2a, RDT&E Project Justification							DATE:
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME	
RDT&E, N /		0603724N, NAVY ENERGY PROGRAM				0838, NAVY MOBILITY FUELS	
	BA 4						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
0838 NAVY MOBILITY FUELS, CLAIMANT NAVAIR	1.434	1.571	1.600	1.586	1.750	1.801	1.857
RDT&E Articles Qty							
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides data through engine and fuel system tests which relate the effects of changes in Navy fuel procurement specification properties to the performance and reliability of Naval ship and aircraft engines and fuel systems. This information is required to: (a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military specification fuels are unavailable or in short supply; and (c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry. Recent problems with fuel quality have adversely affected ship and aircraft system performance and reliability and resulted in degradation of fuel in storage. The resulting readiness impacts, additional maintenance costs, and the cost of lost equipment, although difficult to quantify, are many times the cost of this product. Over the next decade, the potential for fuel quality related problems will increase because of changing industry practices required to comply with new environmental regulations. This project represents the only investment designed to maintain the Navy's ability to operate as a "smart" customer for fuels that cost over \$2.5 B per year for procurement, transport, storage and consuming and are essential to fleet operations.</p>							

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603724N, NAVY ENERGY PROGRAM	0838, NAVY MOBILITY FUELS

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
Accomplishments / Effort / Sub-total Cost	.655	.795	.800
RDT&E Articles Qty			

Aircraft Fuels
 Performs development, test and evaluation work on Naval aircraft fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance to fleet operators for the safe use of military aircraft that include new additives or are from new sources including synthetics; and c) make needed periodic changes to the fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry.

Continued development and evaluation of JP-5 copper contamination removal system. Initiated development of an equipment/fuel qualification procedure to evaluate and approve synthetic aircraft fuels. Completed evaluation of impacts of copper contamination on aircraft engine maintenance/performance.

Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra clean, low sulfur jet fuels. Continue development and evaluation of JP-5 copper contamination removal system. Initiate development of shipboard-based sensors and instruments to rapidly determine critical jet fuel properties. Implement +100 thermal stability enhancing jet fuel additive across T-45 (Training aircraft fleet) fleet for shore-based application.

Continue development of JP-5 copper contamination removal system. Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean, low sulfur jet fuels. Continue development of shipboard-based sensors and instruments to rapidly determine critical jet fuel properties.

Conduct field trial of copper contamination system. Continue development of shipboard-based sensors and instruments to rapidly determine critical jet fuel properties. Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean, low sulfur jet fuels.

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM
		PROJECT NUMBER AND NAME 0838, NAVY MOBILITY FUELS

	FY 2005	FY 2006	FY 2007
Accomplishments / Effort / Sub-total Cost	.779	.776	.800
RDT&E Articles Qty			

Ship Fuels
 Performs development, test and evaluation work on Naval ship propulsion fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military fuels are unavailable or in limited supply; and c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accomodating evolutionary changes in the fuel supply industry.

Continued assessment of the feasibility of specifying JP-5 (jet fuel) as the single fuel at sea for use by all Naval Systems (ships, aircraft and ground equipment). Continued review of the F-76 ship distillate fuel specification and test requirements evaluation to remove any unnecessary requirements to increase availability. Completed development and acceptance of commercial fuel specification American Society For teh Testing of Materials (ASTM D6985 Specification For Middle Distillate Fuel Oil- Military Marine Applications). Initiated development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean. low sulfur ship fuels.

Complete assessment of the feasibility of specifying JP-5 as the Single Fuel at-sea for use by all Naval Systems (ships, aircraft and ground equipment). Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra clean, low sulfur ship fuels. Complete F-76 specification and test requirements evaluation to determine, modify and/or remove any unnecessary requirements to increase availability.

Conduct JP-5 single fuel at sea iniative field trial. Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean, low sulfur ship fuels. Initiate development of shipboard-based sensors and instruments to rapidly determine critical ship fuel properties.

Initiate Implementation of JP-5 as Single Naval Fuel At-Sea. Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean, low sulfur ship fuels. Continue development of shipboard-based sensors and instruments to rapidly determine critical ship fuel properties.

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME 0838, NAVY MOBILITY FUELS
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C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	1.479	1.595	1.607
Current BES / President's Budget:	1.434	1.571	1.600
Total Adjustments	-0.045	-0.024	-0.007

Summary of Adjustments

Congressional Undistributed Reductions	-0.001	-0.017	
Economic Assumptions		-0.007	0.009
Program Adjustments	-0.044		-0.016
Subtotal	-0.045	-0.024	-0.007

Schedule: Schedules have been added since last President's Budget submit.

Technical: Not Applicable

D. OTHER PROGRAM FUNDING SUMMARY:	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									

E. ACQUISITION STRATEGY:

Not Applicable

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA 4		0603724N, NAVY ENERGY PROGRAM				0838, NAVY MOBILITY FUELS							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
PRODUCT DEVELOPMENT													
Systems Engineering		NRL, WASHINGTON DC		.350	3/1/2005					Continuing	Continuing		
SUBTOTAL PRODUCT DEVELOPMENT											Continuing	Continuing	
Remarks:													
SUPPORT													
SUBTOTAL SUPPORT													
Remarks:													
TEST & EVALUATION													
Devlopmental Test & Evaluation	VARIOUS	VARIOUS		.077	VARIOUS	.795	VARIOUS	.800	VARIOUS	Continuing	Continuing		
Devlopmental Test & Evaluation		SOUTHWEST RESEARCH INSTITUTE, SAN		.228	3/1/2005					Continuing	Continuing		
SUBTOTAL TEST & EVALUATION											Continuing	Continuing	
Remarks:													
MANAGEMENT													
Program Management Support	VARIOUS	VARIOUS		.779	VARIOUS	.437	VARIOUS	.453	VARIOUS	Continuing	Continuing		
Program Management Support		SOUTHWEST RESEARCH INSTITUTE, SAN				.339	3/1/2006	.347	3/1/2007	Continuing	Continuing		
SUBTOTAL MANAGEMENT											Continuing	Continuing	
Remarks:													
Total Cost					1.434		1.571		1.600		Continuing	Continuing	
Remarks:													

EXHIBIT R-2a, RDT&E Project Justification							DATE:
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME	
RDT&E, N /		0603724N, NAVY ENERGY PROGRAM				2868, PROTON EXCHANGE MEMBRANE FUEL CELLS	
	BA 4						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
2868 PROTON EXCHANGE MEMBRANE FUEL CELLS	2.701						
RDT&E Articles Qty	12						
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 2868/Proton Exchange Membrane Fuel Cells - This is a Congressional add. Manufacture 12 Proton Exchange Membrane (PEM) Fuel Cell systems, install at PWC Pearl Harbor, Hawaii , operate for 12 months, collect and report performance data, remove systems and return sites to original condition. The purpose of the field test is to demonstrate th reliability and life of PEM fuel cell systems that incorporate an advanced membrane electrode assembly that enhances producibility, performance, and reduces cost. The military requirement addressed is the facility requirement for electrical power and the need to find alternative, affordable energy sources.</p>							

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME 2868, PROTON EXCHANGE MEMBRANE FUEL CELLS
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B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
Accomplishments / Effort / Sub-total Cost	2.701		
RDT&E Articles Qty	12		

2868/Proton Exchange Membrane - Manufacture, installation, operation, and performance evaluation of 12 Proton Exchange Membrane Fuel Cell systems at PWC Pearl Harbor, Hawaii.

C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	2.774		
Current BES / President's Budget:	2.701	0.000	0.000
Total Adjustments	-0.073	0.000	0.000

Summary of Adjustments

Congressional Undistributed Reductions	-0.074		
Congressional Increases	0.001		
Subtotal	-0.073	0.000	0.000

Schedule: Not Applicable.

Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N /		0603724N, NAVY ENERGY PROGRAM			2868, PROTON EXCHANGE MEMBRANE FUEL CELLS					
D. OTHER PROGRAM FUNDING SUMMARY:		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
N/A										
<p>E. ACQUISITION STRATEGY: Program management and acquisition by Naval Air Warfare Center Weapons Division (NAWCWD). Technical management by NAWCWD. Contracting strategy is sole source firm fixed price contract (Hoku Scientific).</p>										

EXHIBIT R-2a, RDT&E Project Justification							DATE:
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME	
RDT&E, N /		0603724N, NAVY ENERGY PROGRAM				9498, MEGAWATT MOLTEN CARBONATE FUEL CELL DEMO	
	BA 4						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
9498 MEGAWATT MOLTEN CARBONATE FUEL CELL	3.375						
RDT&E Articles Qty	1						
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 9498/Megawatt (MW) Molten Carbonate Fuel Cell Demo - This is a Congressional add. Design and manufacture one 1 MW molten carbonate fuel cell and install at MCB Camp Pendleton in California, operate for 12 months, collect and report performance data. The purpose of the field test is to demonstrate the feasibility of the molten carbonate fuel cell to interface with the associated power electronics for electrical grid connection and provide reliable electrical power. The military requirement addressed is the facility requirement for electrical power and the need to find alternative, affordable energy sources. This was a new start effort in FY05. Project value includes potential for cost savings, environmental mitigation, and energy security for electrical power production.</p>							

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME 9498, MEGAWATT MOLTEN CARBONATE FUEL CELL DEMO												
<p>B. ACCOMPLISHMENTS / PLANNED PROGRAM:</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width:70%;"></th> <th style="width:10%;">FY 2005</th> <th style="width:10%;">FY 2006</th> <th style="width:10%;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Accomplishments / Effort / Sub-total Cost</td> <td style="text-align: center;">3.375</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td style="text-align: center;">1</td> <td></td> <td></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>9498/Megawatt Molten Carbonate - Design, manufacture, installation, operation, and performance evaluation of one 1 Megawatt molten carbonate fuel cell at MCB Camp Pendleton in California.</p> </div>					FY 2005	FY 2006	FY 2007	Accomplishments / Effort / Sub-total Cost	3.375			RDT&E Articles Qty	1		
	FY 2005	FY 2006	FY 2007												
Accomplishments / Effort / Sub-total Cost	3.375														
RDT&E Articles Qty	1														

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME 9498, MEGAWATT MOLTEN CARBONATE FUEL CELL DEMO
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C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	3.466		
Current BES / President's Budget:	<u>3.375</u>	<u>0.000</u>	<u>0.000</u>
Total Adjustments	-0.091	0.000	0.000

Summary of Adjustments

Congressional Undistributed Reductions	-0.092		
Congressional Increases	<u>0.001</u>		
Subtotal	-0.091	0.000	0.000

Schedule: Not Applicable.

Technical: Not Applicable.

D. OTHER PROGRAM FUNDING SUMMARY:	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
N/A									

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603724N, NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME 9999, Congressional Adds

9498		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	3.200	0.000
RDT&E Articles Quantity			1	

One megawatt molten carbonate fuel cell demonstrator--Camp Pendleton

9769		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.000	3.750	0.000
RDT&E Articles Quantity			1	

One megawatt molten carbonate fuel cell demonstrator--Pearl Harbor Naval Station

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EXHIBIT R-2, RDT&E Budget Item Justification								February 2006																																																				
Appropriation/Budget Activity RDT&E.A BA4				R-1 Item Nomenclature: 0603725N/ Facilities Improvement																																																								
COST (\$ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011																																																				
Total PE Cost		1.955	6.396	4.194	4.183	4.101	4.064	4.021																																																				
0995 Facilities System		1.955	1.512	1.697	1.775	1.828	1.880	1.935																																																				
3155 Antiterrorism/Force Protection		0.000	2.584	2.497	2.408	2.273	2.184	2.086																																																				
9999 Congressional Add		0.000	2.300	0.000	0.000	0.000	0.000	0.000																																																				
<p>A. Mission Description and Budget Item Justification: (U) This program provides for capabilities to a) overcome performance limitations and reduce the life cycle cost of shore facilities, and b) provide protection against terrorist attacks for shore installations and their operations. The program focuses on technical and operational issues of specific Navy interest, where there are no unbiased test validated Commercial Off the Shelf (COTS) solutions available, and where timely capabilities may not materialize without specific demonstration or validation by the Navy. Additionally, the program completes the development of technologies originating from Navy, DOD and other sources of Science and Technology programs, including the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) and Department of Energy (DOE). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment Restoration and Modernization (SRM) program, and Antiterrorism and Force Protection (ATFP) Other Procurement, Navy (OP,N) program. Project 0995 addresses three Navy facilities requirements during the fiscal years FY 2005 through FY 2007: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Sustainment, Restoration and Modernization, and Modular Hybrid Pier for reducing the total ownership cost of future facilities. This project is consistent with recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities." Starting in FY06 the Antiterrorism Force Protection Project 3155, addresses selective topics in simulation and risk modeling; and material technologies to reduce the vulnerability of installations; and reduce the acquisition and operating costs of protective technologies. The demonstrations and validations provide the independent, technical and operational test data for the development of competitive performance specifications to acquire the required capabilities. The ATFP project is coordinated with other DOD programs.</p> <p>B. Program Change Summary:</p> <table style="width: 100%; margin-left: 40px;"> <thead> <tr> <th style="text-align: left;">Funding:</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>FY 2006 President's Budget</td> <td style="text-align: right;">4.577</td> <td style="text-align: right;">4.158</td> <td style="text-align: right;">4.335</td> </tr> <tr> <td>FY 2007 Budget Estimate</td> <td style="text-align: right;">1.955</td> <td style="text-align: right;">6.396</td> <td style="text-align: right;">4.194</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">2.622</td> <td style="text-align: right; border-top: 1px solid black;">2.238</td> <td style="text-align: right; border-top: 1px solid black;">-0.141</td> </tr> </tbody> </table> <p style="margin-left: 40px;">Summary of Adjustments</p> <table style="width: 100%; margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"></th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Program Adjustments</td> <td style="text-align: right;">0.001</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.170</td> </tr> <tr> <td>Rate Adjustments</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.029</td> </tr> <tr> <td>Congressional Add</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">2.300</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Sec. 8125: Revised Economic Assumptions</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.019</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Congressional Undistributed Reduction</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">-0.043</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Department of Energy Transfer</td> <td style="text-align: right;">-0.001</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Execution Realignment</td> <td style="text-align: right;">0.350</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>Program Realignment</td> <td style="text-align: right;">-2.972</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> </tbody> </table> <p>C. Other Program Funding Summary: Provided in R-2a.</p> <p>D. Acquisition Strategy: Provided in R-2a.</p>									Funding:	FY 2005	FY 2006	FY 2007	FY 2006 President's Budget	4.577	4.158	4.335	FY 2007 Budget Estimate	1.955	6.396	4.194	Total Adjustments	2.622	2.238	-0.141		FY 2005	FY 2006	FY 2007	Program Adjustments	0.001	0.000	-0.170	Rate Adjustments	0.000	0.000	0.029	Congressional Add	0.000	2.300	0.000	Sec. 8125: Revised Economic Assumptions	0.000	-0.019	0.000	Congressional Undistributed Reduction	0.000	-0.043	0.000	Department of Energy Transfer	-0.001	0.000	0.000	Execution Realignment	0.350	0.000	0.000	Program Realignment	-2.972	0.000	0.000
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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995/ Facilities System			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.955	1.512	1.697	1.775	1.828	1.880	1.935
RDT&E Articles Qty		2	3	4	TBD	TBD	TBD	TBD
<p>A. Mission Description and Budget Item Justification:</p> <p>(U) This program provides the Navy with new civil engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available resources on satisfying facility requirements where the Navy is a major stakeholder. There are no test validated Commercial Off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which includes the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facilities requirements during the fiscal years FY 2005 through FY 2007: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Sustainment, Restoration and Modernization and Modular Hybrid Pier. The execution of this program is consistent with the findings and recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities."</p> <p>(U) WATERFRONT FACILITIES REPAIR AND UPGRADE</p> <p>(U) Over 75% of the Navy's waterfront facilities are over 45 years old. They were designed for a service life of 25 years and to satisfy the mission requirements existing at that time. The over aged reinforced concrete requires costly and repetitive repairs. In addition, to accomplish more pier side ship maintenance and thus reduce drydock costs, these piers must be strengthened to support concentrated crane loads up to 140 tons when piers were originally designed for no concentrated loads. This sub-project addresses new materials and design methods to extend the service life of existing waterfront facilities by an additional 15 or more years, and conventional concrete patches and composite-enhanced repairs. Other initiatives include; new longer-lasting low-maintenance fendering systems that eliminate the need for the frequent replacement of timber piles and fenders; a new Impluse Load Method (ILM) for accurately and quickly determining the vertical load capacity of piers and wharves; and a new Swinging Weight Deflectometer (SWD) technique to determine the lateral stability of piers for earthquake forces and docking ship's impact. Using this new technology at a cost of \$1-2M for repairs and upgrades per pier will result in \$50M in cost avoidance for demolition and replacement.</p> <p>(U) FACILITY TECHNOLOGIES TO REDUCE THE COST OF SUSTAINMENT, RESTORATION AND MODERNIZATION (SRM)</p> <p>(U) The costs to correct these critical facility backlog deficiencies are over \$3.1B as reported in the FY 2000 Annual Inspection Summary (AIS). Current Navy SRM funding levels are insufficient to prevent the continued growth of the backlog of mission and safety critical maintenance and repairs. This effort will demonstrate and validate the cost and reliability of advanced technologies in order to assure their acceptance and implementation in traditionally conservative public works and construction industries. The effort will accelerate the validation, commercialization, and widespread implementation of the facility technologies urgently required to reduce the cost of correcting the deficiencies in the Navy's SRM backlog. Estimated returns on these investments are better than 60 to 1.</p>								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995/ Facilities System
<p>(U) MODULAR HYBRID PIER (MHP)</p> <p>The Navy is faced with the necessity of recapitalizing a large portion of its waterfront infrastructure over the next several decades. The Modular Hybrid Pier initiative develops and validates innovative material and design technologies for a mission-flexible waterfront infrastructure characterized by significantly reduced total ownership cost and increased mission flexibility. The proceeding sub-project Waterfront Facilities Repair and Upgrade will enable the Navy to economically extend the useful service life of existing piers and wharves. While reducing the need for immediate replacement, eventual replacement will be required. This MHP sub-project provides improved technology for new piers. Emerging innovative structural and materials technologies, particularly those that will transition from the Navy's applied research and advanced development program, will provide enhanced-capability. Structures may have a comparable initial cost yet have far less maintenance and repair costs. Use of advanced materials and high performance lightweight concrete will produce structures that have twice the economic service life of the conventional piers. Modular design will enable off-site fabrication in pre-cast plants that will shorten the duration and lower the cost relative to conventional on-site construction. Plant fabrication will vastly improve repair-free durability because of superior quality control and application of high performance concrete and post-tensioning technologies. The modular concept will facilitate change-out of components for modifications to increase or capacity to adapt to future in ship designs. Mobility/relocatability of barge size modules through flotation is a significant new capability option which saves money and provides new military worth. An economic analysis has shown that a modular hybrid (deployable) pier will have a Net Present Value (NPV) cost that is \$15M less over its service life than that for a conventional pier constructed of ordinary reinforced concrete. The MHP will have superior operational benefits to ship/port operations.</p>		

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006													
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995 / Facilities System														
B. Accomplishments/Planned Program																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%;">FY 05</th> <th style="width: 10%;">FY 06</th> <th style="width: 10%;">FY 07</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Waterfront Repair and Upgrade</td> <td style="text-align: center; padding: 2px;">0.000</td> <td style="text-align: center; padding: 2px;">0.000</td> <td style="text-align: center; padding: 2px;">0.100</td> </tr> <tr> <td style="padding: 2px;">RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 05	FY 06	FY 07	Waterfront Repair and Upgrade	0.000	0.000	0.100	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07													
Waterfront Repair and Upgrade	0.000	0.000	0.100													
RDT&E Articles Quantity																
<div style="border: 1px solid black; padding: 5px; min-height: 80px;"> <p>FY 07: Complete validation testing and evaluation of Swinging Weight Deflectometer (new capability) method for determining the remaining strength of piers to resist lateral loads from berthing ships. Initiate testing of agents to reduce corrosion inducing chloride ion penetration rates.</p> </div>																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%;">FY 05</th> <th style="width: 10%;">FY 06</th> <th style="width: 10%;">FY 07</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Sustainment, Restoration & Modernization Tech Reduc</td> <td style="text-align: center; padding: 2px;">0.000</td> <td style="text-align: center; padding: 2px;">0.000</td> <td style="text-align: center; padding: 2px;">0.500</td> </tr> <tr> <td style="padding: 2px;">RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 05	FY 06	FY 07	Sustainment, Restoration & Modernization Tech Reduc	0.000	0.000	0.500	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07													
Sustainment, Restoration & Modernization Tech Reduc	0.000	0.000	0.500													
RDT&E Articles Quantity																
<div style="border: 1px solid black; padding: 5px; min-height: 150px;"> <p>FY 07: Complete field (validation) testing of high temperature pavement joint sealants.</p> </div>																

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006														
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995 / Facilities System														
B. Accomplishments/Planned Program (Cont.)																
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 10%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Modular Hybrid Pier</td> <td style="text-align: center;">1.955</td> <td style="text-align: center;">1.512</td> <td style="text-align: center;">1.097</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> <td></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px;"> <p>FY 05: Construct test structure mooring and moor modules. Demonstrate ability to achieve critical technical parameters for installation tolerances and for construction quality during module assembly and mooring integration.</p> <p>FY 06: Install and test shore access ramp and support bearings for required strength and rotational/traditional capabilities. Install and test full scale MHP service utility mock-ups at ramp articulation points. Initiate corrosion monitoring and structural tests (DT/OT) on critical subassemblies of demonstration structure (assembled modules and moorings). Complete suimulation and modeling of response to long period waves (harbor seiche) and to wakes of passing ships.</p> <p>FY 07: Complete structural and hydrodynamic tests on demonstration structure. Continue corrosion monitoring. Complete hydrodynamic modeling and simulation of response to hurricane generated wind, wave and current. Revise preliminary design to capture lessons-learned from test article construction, demonstration testing and simulation & modeling.</p> </div>						FY 05	FY 06	FY 07	Modular Hybrid Pier	1.955	1.512	1.097	RDT&E Articles Quantity	2	0	
	FY 05	FY 06	FY 07													
Modular Hybrid Pier	1.955	1.512	1.097													
RDT&E Articles Quantity	2	0														

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995 / Facilities System				
C. Other Program Funding Summary:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
<p>P-1 Procurement Line Item No. & Name. Not applicable. C-1 MILCON Project No. & Name. Not applicable.</p> <p>(U) RELATED RDT&E: This project transitions waterfront facilities technology from applied research and advanced development programs PE0602234N, Materials, Electronics and Computer Technology, PE0602236N, Warfighter Sustainment Applied Research, and PE0603236N, Warfighter Sustainment Advanced Technology. It also transitions facility technologies developed at universities under the sponsorship of the National Science Foundation (NSF), by the Building and Fire Research Laboratory (BRL) of the National Institute of Standards and Technology (NIST), and by the Construction Engineering Research Laboratories (CERL) and Waterways Experiment Station (WES) of the U. S. Army Engineer Research and Development Center (USAERDC) when they can contribute to the solution of one of the Navy requirements being addressed by this project. The project pursues opportunities to leverage private sector investment through partnerships with private sector organizations, such as the Civil Engineering Research Foundation (CERF), the Marketing Development Alliance (MDA) of Fiberglass Reinforced Plastics Composites Industry and the Strategic Development Council of the American Concrete Institute. The project seeks to leverage and collaborate with the navy Sustainment, Restoration and efforts including Military Construction.</p> <p>D. Acquisition Strategy: (U) This project is categorized as Non-ACAT (Non Acquisition). The know-how produced from this project enables the safe and cost effective application of emerging/advanced technology concepts and products: 1) specifying or describing the performance, 2) enabling innovative design applications, 3) enabling quality control/quality assurance during constructions, 4) enabling reliability and maintainability during operations, and 5) developing lifecycle cost projections and environmental sustainability life cycle data for Navy policy guidance and criteria serving the Navy Sustainment, Restoration and Modernization and Military Construction (MILCON) programs. The data from this program enables earliest and safe utilization of advanced technology for cost avoidance in the facilities infrastructure. The technical know-how of this program is transferred to the construction industry that delivers Navy construction and maintenance through the inclusion of individual firms (using competitive selection processes) and industry organizations/associations in the development and testing activities. MILCON, Repair and Modernization are not serial production acquisition processes but site specific construction acquisitions.</p>									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			PE0603725N / Facilities Improvement			0995 / Facilities System								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Waterfront Facilities Repair & Upgrade	WX	NFESC, Pt Hueneme, CA	1.760							0.100	10/06	nominal varies	cont.	na
	WR	NUWC, New London, CT	0.687										0.687	
	WR	EFANW, Poulsbo, WA	0.012										0.012	
	FP	MCA Engrg, Costa Mesa, CA	0.045										0.045	
Sustainment, Restoration & Modernization Tech	WX	NFESC, Pt Hueneme, CA	3.583							0.200	10/06	nominal varies	cont.	na
	FP	CERF, Washington, DC	0.045										0.045	
	RC	LANTDIV, Norfolk, VA	0.051										0.051	
	FP	NAS Misawa, Misawa, Japan	0.028										0.028	
	WR	SWDIV, San Diego, CA	0.002										0.002	
	FP	Han Padron Inc., NY	0.019										0.019	
	FP	Atmos Anal. &Consult, Inc.	0.006										0.006	
	RC	N. State Univ. Aberdeen, MD	0.042										0.042	
	WR	PWD, NWS, Charleston, SC	0.081										0.081	
	FP	ADC, Inc.	0.021										0.021	
	FP	Weston Geophysical, MA	0.025										0.025	
	FP	Northwestern Univ., IL	0.024										0.024	
	FP	Blackledge Diving	0.010										0.010	
	FP	ABC Painting, CA	0.032										0.032	
	FP	Polyspec Corp., TX	0.060										0.060	
	FP	Abras. Blast & Coat, CA	0.030										0.030	
	MP	U. S. Army Huntsville, AL	0.100										0.100	
	RC	Contractors TBD	0.050							0.300	03/07	cont.	cont.	
Modular Hybrid Pier	WR	NFESC, Pt Hueneme, CA	0.760			0.750	10/04	0.637	10/05	0.297	10/06	nominal varies	cont.	na
	WR	SWDIV, San Diego, CA	0.142			0.195	10/04						0.337	
	FP	BergerAbam, Seattle, WA	2.308					0.800	02/06	0.700	02/07		3.808	
	RC	Marathon Const., CA	1.147			1.010	03/05						2.157	
	RC	Texas A&M	0.000					0.075	03/06	0.100	03/07			
			11.070			1.955		1.512		1.697		0.000	16.234	
Remarks: Total Prior Years Cost summation does not include performing activities from projects completed in prior years.														
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	
Remarks: Included in Product Development costs.														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			PE0603725N / Facilities improvement			0995 / Facilities System								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														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	0.000
Remarks: Not applicable.														
Contractor Engineering Support														0.000
Government Engineering Support														0.000
Program Management Support														0.000
Travel														0.000
Labor (Research Personnel)														0.000
SBIR Assessment														0.000
Subtotal Management			0.000			0.000		0.000		0.000		0.000	0.000	0.000
Remarks: Not applicable.														
Total Cost			11.070			1.955		1.512		1.697		0.000	16.234	
Remarks:														

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2006																														
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME								
RDT&E, N / BA-4												PE0603725N / Facilities Improvement												0995 / Facilities System								
Fiscal Year					2005				2006				2007				2008				2009				2010				2011			
	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
MHP Acquisition Milestones												MS C								IOC				FRP Dec								
MHP Systems Test Bed																																
MHP System Development												PDR												CDR								
Test & Evaluation Milestones												DT/OT																				
Development Test																																
Operational Test																																
Production Milestones																																
LRIP (1st MHP) FY 07												LRIP Start																				
FRP FY 09																																
Deliveries																																

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R-4 Schedule Profile

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 Antiterrorism/Force Protection			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		0.000	2.584	2.497	2.408	2.273	2.184	2.086
RDT&E Articles Qty		N/A	N/A	N/A	N/A	N/A	N/A	N/A
<p>A. Mission Description and Budget Item Justification:</p> <p>(U) Protection of the Navy Installations against terrorist activities requires development and deployment of advanced technology for force protection capabilities that are cost effective. Manpower costs of protection systems with today's technology are very high . Performance is not adequate to reduce vulnerability cost-effectively This Antiterrorism and Force Protection Ashore Project will develop, demonstrate and validate technologies for the following: access control and perimeter denial; waterside protection against craft and swimmer intrusion; secure and efficient operations centers and emergency centers (including human and information support systems); construction integrated surveillance sensors and robotic systems for intruder detection; material systems to improve utilities security and recovery; and material concepts to reduce injury and death. Through demonstration and validation of risk modeling and simulation models, the potential of emerging technologies will be evaluated and installation security strategies that reduce manpower and other costs will be formulated. Installation protection concepts against attacks from the air will be identified and jointly demonstrated. These demonstrations and validations derive from advanced technology from science and technology programs of government academia and industry. The technology produces data for performance specifications for competitive procurement. All work will be coordinated with other programs and through industry forums as appropriate.</p>								
Funding:		FY 2005	FY 2006	FY 2007				
Previous President's Budget: (FY 06 Pres Controls)		0.000	2.625	2.494				
Current Budget:		0.000	2.584	2.497				
Total Adjustments		0.000	-0.041	0.003				
Summary of Adjustments								
Program Realignment		0.000	-0.041	0.003				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 3155 Antiterrorism/Force Protection	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
	0.000	2.584	2.497
RDT&E Articles Quantity			
<p>FY 06: Develop and apply risk modeling to evaluate the potential of emerging technology and formulate installation protection concepts and operations that require reduced life cycle cost including manpower. The following technology areas will be explored for validation testing, cost reduction potential and transition to procurement: access control technology and configuration concepts; access denial concepts and technology against swimmers and submerged vehicles; secure operations centers and reduced manning concepts; material systems for utilities security and recovery; injury reduction design and material concepts, devices and systems; robotic devices to reduce human risk, enhance longevity and reliability of certain dangerous and repetitive functions in facilities protection; demonstrate simulation tools for resolving complex issues, such as terrorist attack probabilities and patterns and optimum defensive concepts for levels of technology; and demonstrate concepts of protection from air attacks. Appropriate test validations will be initiated.</p> <p>FY 07: Continue with technical and operational test demonstrations. Validation of decision support risk modeling and simulation tools for total installation with advanced technology to reduce manning. Demonstration of robotic and neural networks technology in high risk and complex installation protection functions. Define concept development for protection from terrorist air attacks. Demonstration of material concepts in enhancing the probability of utility continuity following an attack. Advanced access control technology demonstrations to reduce cost.</p>			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDT&E, N / BA-4		0603725N / Facilities Improvement			3155 Antiterrorism/Force Protection				
C. Other Program Funding Summary:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
P-1 Procurement Line item No., Name: 812800 Physical Security Equipment	136.039	109.523	112.035	98.576	131.299	90.670	88.393	Con't	Con't
C-1 MILCON Project No. & Name. Not applicable.									
(U) RELATED RDT&E: PE 0605862		4.814							
D. Acquisition Strategy: Not applicable. Demonstration and validation is conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.									
E. Major Performers Naval Surface Warfare Center , Crane IN Naval Facilities Engineering Service Center (NFESC), Port Hueneme, CA Naval Surface Warfare Center (NSWC-DL), Dahlgren, VA Naval Surface Warfare Center (NSWC) Panama City, FL Naval Air Warfare Center(NAWC PAXRIV), Patuxent, MD SPAWAR Systems Center San Diego, CA Naval Air Warfare Center(NAWC) China Lake, CA									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			PE0603725N / Facilities Improvement			3155 Antiterrorism/Force Protection							
Cost Categories	Contract Method & Type	Performing Activity & Location	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Antiterrorism/Force Protection	TBD	NFESC, Port Hueneme, CA	0.000		0.800		0.900	TBD	1.000	TBD	Cont.	Cont.	
Antiterrorism/Force Protection	TBD	NSWC Panama City & Dahlgren	0.000		0.784		0.397	TBD	0.408	TBD	Cont.	Cont.	
Antiterrorism/Force Protection	TBD	NAWC CHINA LAKE	0.000		0.000		0.200	TBD	0.000	TBD	Cont.	Cont.	
Antiterrorism/Force Protection	TBD	SSC San Diego	0.000		1.000		1.000	TBD	1.000	TBD	Cont.	Cont.	
												0.000	
												0.000	
												0.000	
						2.584		2.497		2.408		0.000	0.000
Remarks: New start in FY06.													
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
Remarks: Included in Product Development costs.													

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			PE0603725N / Facilities improvement			3155 Antiterrorism/Force Protection								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	NA							0.000	TBD	0.000	TBD	Cont.		Cont.
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	0.000
Remarks: Not applicable.														
Contractor Engineering Support														0.000
Government Engineering Support														0.000
Program Management Support														0.000
Travel														0.000
Labor (Research Personnel)														0.000
SBIR Assessment														0.000
Subtotal Management			0.000			0.000		0.000		0.000		0.000	0.000	0.000
Remarks: Not applicable.														
Total Cost			0.000			2.584		2.497		2.408		0.000	0.000	0.000
Remarks: Not applicable.														

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	9999 Congressional Adds
9538	Playas instrumentation network design and development	FY 2006 1,100
9859	Regenerative fuel cell back up power systems for land installations	1,200

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603739N Navy Logistic Productivity			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE0603739N Cost	19.727	20.575	6.306	3.641	2.906	3.042	3.180
2920 Ordnance Management	5.072	5.841	3.674	0.941			
2955 JEDMICS	2.859	2.934	2.632	2.700	2.906	3.042	3.180
9999 Congressional Adds	11.796	11.800					
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>2920 Ordnance Management - Covers the conversion of Naval Ammunition Logistics Center (NALC) systems to the Ordnance Information Systems(OIS).</p> <p>2955 JEDMICS - In FY85 Congress directed the Services and Defense Logistics Agency to permanently capture, manage and control engineering data in digital format so it would be available to support competitive spares re-procurement. The Joint Engineering Data Management Information & Control System (JEDMICS) program manages and controls 67,000,000 engineering images and has 41,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 21 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since its brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, ECP processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.</p> <p>9999 - Congressional Adds</p>							

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity		PROJECT NUMBER AND NAME 2920 Ordnance Management				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		5.072	5.841	3.674	0.941	0.000	0.000	0.000
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>Naval Operational Logistics Support Center(NOLSC) systems conversion to the Ordnance Information Systems(OIS): The OIS is an umbrella concept that integrates approximately 12 different functions that are currently produced by "stove-pipe" systems. OIS is an integrated suite of tools that uses the latest available information technology and best commercial practices to provide timely, relevant and accurate ordnance information and global ordnance visibility. It integrates wholesale, retail, and unique ordnance decision support systems to facilitate global ordnance positioning and information sharing across the DoN ordnance community to maximize warfighter support. Without a robust ordnance information system, the Navy and Marine Corps Aviation's ability to prevail in combat is jeopardized. This degradation will increase exponentially in the joint environment and the RDT&E initiatives listed herein are designed to ensure maximum Information Technology(IT) capability.</p>								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006													
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME 2920 Ordnance Management													
B. Accomplishments/Planned Program															
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></th> <th style="width:12.5%;">FY 05</th> <th style="width:12.5%;">FY 06</th> <th style="width:12.5%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td align="center">5.072</td> <td></td> <td></td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="margin-top: 10px;">NALC plans to use a combination of software development, training development, and configuration management for the following OIS systems: Ammunition Investment Model (AIM) , Packaging, Handling, Storage & Transportation (PHS&T), Exercise Planning, Fleet Readiness, etc.</p>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	5.072			RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost	5.072														
RDT&E Articles Quantity															
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></th> <th style="width:12.5%;">FY 05</th> <th style="width:12.5%;">FY 06</th> <th style="width:12.5%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td align="center">5.841</td> <td></td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="margin-top: 10px;">NALC plans to use a combination of software development, training development, and configuration management for the following OIS systems: PHS&T, Joint Sentencing Toolkit, Weapons Maintenance Support, Explosive Safety, etc.</p>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		5.841		RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost		5.841													
RDT&E Articles Quantity															
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;"></th> <th style="width:12.5%;">FY 05</th> <th style="width:12.5%;">FY 06</th> <th style="width:12.5%;">FY 07</th> </tr> </thead> <tbody> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td></td> <td align="center">3.674</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="margin-top: 10px;">NALC plans to use a combination of software development, training development, and configuration management for the following systems: PHS&T, Production / Industrial Base Support and Weapons Allocation Capability.</p>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost			3.674	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost			3.674												
RDT&E Articles Quantity															

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME 2920 Ordnance Management		
C. PROGRAM CHANGE SUMMARY:				
Funding:		<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Previous President's Budget		4.374	5.930	3.650
Current BES/President's Budget		5.072	5.841	3.674
Total Adjustments		<u>0.698</u>	<u>-0.089</u>	<u>0.024</u>
Summary of Adjustments				
Congressional program reductions			-0.062	
Economic Assumptions			-0.027	0.016
Program Adjustments		0.698		0.008
Subtotal		<u>0.698</u>	<u>-0.089</u>	<u>0.024</u>
Schedule:				
Not Applicable				
Technical:				
Not Applicable				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME 2920 Ordnance Management

D. OTHER PROGRAM FUNDING SUMMARY:

E. ACQUISITION STRATEGY:

FY 2005

OCT 05 - PHS&T and Joint Sent Toolkit
JUN 05 - Weapons Maintenance Support and
JUL 05 - Explosive Safety
SEP 05 - ROLMS

FY 2006

OCT 05 - PHS&T and Joint Sentencing ToolKit
NOV 05- SEP 08 - PHS&T of Ammo-DoD Logistics
JUN 06 - Mobilization/Exercise Planning

FY 2007

NOV 05-SEP 08 - PHS&T of Ammo-DoD Logistics
SEP 08 - Production/Industrial Base Support
SEP 08 - Fairshare (Weapon Allocation Capability)

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603739N Navy Logistic Productivity		2920 Ordnance Management							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development											0.000	
Remarks:												
Development Support Equipment											0.000	
Software Development		NOLSC, Multiple		3.821	10/04	4.290	10/05	2.649	10/06		10.760	
Training Development		NOLSC, Multiple		0.139	10/04	0.227	10/05	0.195	10/06		0.561	
Integrated Logistics Support											0.000	
Configuration Management		NOLSC, Multiple		0.179	10/04	0.238	10/05	0.171	10/06		0.588	
Technical Data											0.000	
GFE											0.000	
Subtotal Support				4.139		4.755		3.015		0.000	11.909	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)											DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity		PROJECT NUMBER AND NAME 2920 Ordnance Management							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		NOLSC, Multiple		0.587	10/04	0.687	10/05	0.412	10/06		1.686	
Operational Test & Evaluation		NOLSC, Multiple		0.316	10/04	0.357	10/05	0.221	10/06		0.894	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.903		1.044		0.633		0.000	2.580	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	NOLSC, Multiple		0.030	10/04	0.042	10/05	0.026	10/06		0.098	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.030		0.042		0.026		0.000	0.098	
Remarks:												
Total Cost				5.072		5.841		3.674		0.000	14.587	
Remarks:												

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME 2920 Ordnance Management			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development/Integration		Q1-Q4	Q1-Q4	Q1-Q4	Q1-Q3			
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)		Q1-Q4	Q1-Q4	Q1-Q4	Q1-Q3			
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 Initial Production II Delivery								
IOC		Q1-Q4	Q1-Q4	Q1-Q4	Q1-Q2			
Full Operating Capability (FOC)		Q2-Q4	Q1-Q4	Q1-Q4	Q1-Q3			
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

**Exhibit R-2 RDTEN Budget Item Justification
(Exhibit R-2, Page 9 of 22)**

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R-1 Shopping List Item No 66

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /		PROGRAM ELEMENT NUMBER AND NAME BA 4 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
2955 JEDMICS	2.859	2.934	2.632	2.700	2.906	3.042	3.180	
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>In FY85 Congress directed the Services and Defense Logistics Agency to permanently capture, manage and control engineering data in digital format so it would be available to support competitive spares re-procurement. The Joint Engineering Data Management Information & Control System (JEDMICS) program manages and controls 67,000,000 engineering images and has 41,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 21 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since its brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, ECP processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.</p>								

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 2955, JEDMICS	
B. ACCOMPLISHMENTS / PLANNED PROGRAM:				
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.236	.225	.233	
RDT&E Articles Qty				
Conduct technical evaluations and configuration control reviews of JEDMICS system.				
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	.045	.045	.045	
RDT&E Articles Qty				
Conduct test and readiness reviews and functional performance tests on JEDMICS system.				
	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	2.578	2.664	2.354	
RDT&E Articles Qty				
Conduct development efforts associated with COTS obsolescence of the fully deployed COTS intensive JEDMICS system. Conduct COTS requirements definition, evaluation, integration and testing of annual baseline releases. Conduct technology insertion of the JEDMICS system that is required to protect the \$21B digital data asset managed in JEDMICS.				

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME							
RDT&E, N /	BA 4	0603739N, NAVY LOGISTIC PRODUCTIVITY						2955, JEDMICS	
C. PROGRAM CHANGE SUMMARY									
Funding:	FY 2005	FY 2006	FY 2007						
Previous President's Budget:	2.934	2.979	2.832						
Current BES / President's Budget:	2.859	2.934	2.632						
Total Adjustments	-0.075	-0.045	-0.200						
Summary of Adjustments									
Congressional Undistributed Reductions	-0.073	-0.031							
Congressional Increases	0.001								
Economic Assumptions		-0.014	0.016						
Program Adjustments	-0.003		-0.216						
Subtotal	-0.075	-0.045	-0.200						
Schedule: Not Applicable									
Technical: Not Applicable									
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
Not Applicable									

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /		PROGRAM ELEMENT BA 4 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
SUBTOTAL PRODUCT DEVELOPMENT												
Remarks:												
SUPPORT												
Development Support	MIPR	ARMY, REDSTONE ARSENAL AL				.140	10/31/2005				.140	
Software Development	C-FFP	NORTHROP GRUMMAN INFORMATION TECHNOLOGY, MCLEAN, VA	7.675	2.578	11/30/2004	2.524	11/30/2005	2.354	11/30/2006	16.610	31.741	31.741
SUBTOTAL SUPPORT			7.675	2.578		2.664		2.354		16.610	31.881	
Remarks: Funds are for development efforts associated with COTS obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Information & Control System (JEDMICS). Funds are for COTS evaluation, integration, and test and evaluation. The common baseline will be regained and obsolete COTS software and hardware will be replaced. Baseline releases will protect joint interoperability, upgrade operating systems for security patches and supportable versions, support integration to replace obsolete COTS, and upgrade the Oracle database to supportable versions.												
TEST & EVALUATION												
Dev Test & Eval	VARIOUS	VARIOUS	.898	.045	VARIOUS	.045	10/31/2005	.045	10/31/2006	.270	1.303	
SUBTOTAL TEST & EVALUATION			.898	.045		.045		.045		.270	1.303	
Remarks: Supports testing and evaluation of baseline releases in a user environment.												
MANAGEMENT												
Government Eng Sup	VARIOUS	VARIOUS	.479	.189	VARIOUS	.177	10/31/2005	.184	10/31/2006	1.191	2.220	
Program Mgmt Sup	WX	NAWCAD, PATUXENT RIVER MD	.113	.005	10/31/2004	.005	10/31/2005	.005	10/31/2006	.034	.162	
Travel	VARIOUS	VARIOUS	.048	.042	VARIOUS	.043	VARIOUS	.044	VARIOUS	.285	.462	
SUBTOTAL MANAGEMENT			.640	.236		.225		.233		1.510	2.844	
Remarks: Supports requirements management at the Prime Contractor location.												
Total Cost			9.213	2.859		2.934		2.632		18.390	36.028	
Remarks:												

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CLASSIFICATION:																EXHIBIT R4, Schedule Profile																DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY								PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME																			
RDT&E, N / BA-4								0603739N, NAVY LOGISTIC PRODUCTIVITY								2955, JEDMICS																			
Fiscal Year	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011										
	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	MSIII/C5				MS				MSIII/C7				MS III/C8				MSIII/C9				MSIII/C1				MSIII/C11										
Requirements: Service IPT/ECs				Release 3.7				Release 3.8				Release 3.9				Release 3.10				Release 3.11				Release 3.12				Release 3.13							
Contract Award	▲				▲				▲				△				△				△				△										
Software and Hardware Evaluation / Integration	Release 3.6				Release 3.7				Release 3.8				Release 3.9				Release 3.10				Release 3.11				Release 3.12										
Test & Evaluation Milestones																																			
Risk Assessment				Release 3.6				Release 3.7				Release 3.8				Release 3.9				Release 3.10				Release 3.11				Release 3.12							
Developmental/Functional Testing				Release 3.6				Release 3.7				Release 3.8				Release 3.9				Release 3.10				Release 3.11				Release 3.12							
Alpha/Beta Testing	■			Release 3.6	■			Release 3.7	■			Release 3.8	■			Release 3.9	■			Release 3.10	■			Release 3.11	■			Release							
Deliveries: Engineering Change Package	▲			Release 3.6	▲			Release 3.7	▲			Release 3.8	▲			Release 3.9	▲			Release 3.10	▲			Release 3.11											

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Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&BA-4		PROGRAM ELEMENT 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Alpha/Beta Testing Release 3.5	1Q							
Engineering Change Package Release 3.5	1Q							
Milestone III F or C5 (MSIII F/C5) Release 3.5	1Q							
Contract Award	1Q							
Software Hardware Evaluation/Integration Release 3.6	1Q-3Q							
Risk Assessment Release 3.6	3Q							
Developmental/Functional Testing Release 3.6	4Q							
Service IPT/ECPs Release 3.7	4Q							
Alpha/Beta Testing Release 3.6	4Q	1Q						
Engineering Change Package Release 3.6		1Q						
Milestone III G or C6 (MSIII G/C6) Release 3.6		1Q						
Contract Award		1Q						
Software Hardware Evaluation/Integration Release 3.7		1Q-3Q						
Risk Assessment Release 3.7		3Q						
Developmental/Functional Testing Release 3.7		4Q						
Service IPT/ECPs Release 3.8		4Q						
Alpha/Beta Testing Release 3.7		4Q	1Q					
Engineering Change Package Release 3.7			1Q					
Milestone III H or C7 (MSIII H/C7) Release 3.7			1Q					
Contract Award			1Q					
Software Hardware Evaluation/Integration Release 3.8			1Q-3Q					
Risk Assessment Release 3.8			3Q					
Developmental/Functional Testing Release 3.8			4Q					
Service IPT/ECPs Release 3.9			4Q					
Alpha/Beta Testing Release 3.8			4Q	1Q				
Engineering Change Package Release 3.8				1Q				
Milestone III I or C8 (MSIII I/C8) Release 3.8				1Q				
Contract Award				1Q				
Software Hardware Evaluation/Integration Release 3.9				1Q-3Q				
Risk Assessment Release 3.9				3Q				
Developmental/Functional Testing Release 3.9				4Q				
Service IPT/ECPs Release 3.10				4Q				
Alpha/Beta Testing Release 3.9				4Q	1Q			
Engineering Change Package Release 3.9					1Q			
Milestone III J or C9 (MSIII J/C9) Release 3.9					1Q			

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY			PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		11.796	11.800					
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: CONGRESSIONAL ADDS</p> <p>2767 CLP is a government owned, contractor maintained, web-enabled information program providing DoD users with access to an open environment of logistics, supply chain, and engineering design interface data. CLP is designed to provide the Navy engineering and logistics infrastructure with the tools to shorten weapons system acquisition lead times, reduce equipment sparing requirements and improve equipment sustainability, while decreasing total ownership costs.</p> <p>9047 JEDMICS</p> <p>9540 Funding will support a NLRRC which allows Navy supply system managers, Navy acquisition managers, and weapon system program managers to address the Navy spare parts support shortfalls and configuration maintenance issues.</p> <p>9787 Deploys AIT enabled electronic container tracking hardware and application software to Naval Air Stations for wireless monitoring and in-transit visibility of mission critical aviation Depot Level Repairables pre-positioned in Pack-up Kits for contingent operations... reduces turnover inventory from 2-3 days to 20-25 minutes, with 100% accuracy.</p> <p>9788 This initiative is a proactive approach towards mitigating the supply chain impact of European legislation (Waste Electrical & Electronic Equipment directive) eliminating the use of lead solder in micro-circuit boards and components, and determining impacts and approaches to repair capabilities.</p> <p>9789 SEALEGS system on chip-based radar warning receiver processor</p>								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

2767		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		4.065	4.300	
RDT&E Articles Quantity				

Collaborative Logistics Productivity (CLP)

9047		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.928	2.700	
RDT&E Articles Quantity				

JEDMICS Enhancements: Complied with Congressional direction for Technical Data Management Enhancements.

9358		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.933		
RDT&E Articles Quantity				

Life Cycle Savings through Mach Health Monitor

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS		
B. Accomplishments/Planned Program				
9539		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.967		
RDT&E Articles Quantity				
DITDC				
9540		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		0.967	1.000	
RDT&E Articles Quantity				
Navy Logistics Readiness Research Center (NLRRC)				
9787		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.000	
RDT&E Articles Quantity				
AIT Enabled Activation Pack-up Kits				

R-1 SHOPPING LIST - Item No.

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**Exhibit R-2 RDTEN Budget Item Justification
(Exhibit R-2, Page 19 of 22)**

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9788		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost			1.000	
RDT&E Articles Quantity				

Logistics Impact of lead free circuits and components

9541 & 9789 SEALEGS SYSTEM		FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost		1.936	1.800	
RDT&E Articles Quantity				

SEALEGS system on chip-based radar warning receiver processor: The Service Life Extension of Avionics Legacy Equipment with Guaranteed System (SEALEGS) Small Business Innovative Research (SBIR) Phase III program is predicated on a set of novel leading-edge highly automated engineering design and chip development tools used for behavioral analysis, clock-cycle accurate virtual modeling/prototyping, extensive regression testing, and design/layout of advanced system-on-chip (SoC) products for application to military systems. This technology eliminates the need for expensive system software re-writes and the resulting modernized system hardware is 100% binary compatible with the all of the legacy software. The technology also allows the military the option to gradually modernize software or use all new software written in modern HOL like 'C++-based' software...Resulting hardware is 100% compatible with all test equipment and is warranted for ten (10) years. Trusted supply and anti-tamper technology of critical chip components and systems is also available with this technology. All deliveries of modernized legacy hardware includes all software support tools. When applied correctly, this program will enable an entirely new approach to solving problems associated with lack of microcircuit supply (parts obsolescence) without demanding the need for expensive rewriting of legacy software. SoC technology uses leading edge technology enabling systems that are concurrently clock-cycle accurate replicas of the system being renewed and are capable new higher performance capabilities needed to introduce new functionality as weapon systems age. Program will extend the effective use of weapon systems while reducing the costs of operations and support. Use of highly automated engineering design tools enables solutions at about 30-40% the costs of other known approaches. Virtual models enable extensive system verification prior to hardware fabrication as well as verification of legacy software operability. Program addresses the existing operational requirements of systems receiving a technological upgrade in a form, fit and function compatibility to the existing subsystem. SoC typically permits replacement of tens of electronic modules with a single chip. The space freed-up by this technology is then available for additional functionality for new requirements. FY2006 funding will enable a flyable prototype of an Advanced AYK-14 mission computer used in older model F/A-18's, EA-6B, and other systems. The SEALEGS Program provides a means for the Navy/DoD to avoid the typical high costs associated with component obsolescence and software maintenance. Program Managers responsible for electronics commodities or weapons systems will have more ability to control the costs associated with support of their fielded systems without the need to sacrifice performance or the ability to introduce required new functionality. Under the FY2005 effort flyable prototype Advanced AYK-14 mission computers capable of running existing Operational Flight Program (OFP) software used by legacy F/A-18's were delivered and tested at the Naval Air Warfare Center – Weapons Division (NAWC-WD). These new computers were packaged in the same boxes used for the old computers and have ample residue space inside to add more critical functionality.

FY2006 plans include the continued application of SEALEGS technology by building upon FY2005 accomplishments with systems developed and tested by initiation of application of system-on-chip technology and utilizing the "new" spare module slots for additional system functionality including video image processing (for target identification and damage assessment) development of prototype processor hardware for electronic warfare radar warning receiver systems or other mission critical systems that yield increased warfighting capabilities for legacy platforms. In addition, other subsystems will be investigated for possible applications of the SEALEGS SoC technology.

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603739N, NAVY LOGISTIC PRODUCTIVITY	9999, CONGRESSIONAL ADDS	
C. PROGRAM CHANGE SUMMARY:			
Funding:		FY 05	FY 06
Previous President's Budget:		12.085	0.000
Current BES/President's Budget		11.796	11.800
Total Adjustments		<u>-0.289</u>	<u>0.000</u>
Summary of Adjustments			
Congressional Undistributed Reductions		-0.289	
Congressional Increases			11.800
Subtotal		<u>-0.289</u>	<u>0.000</u>
Schedule:			
Not applicable.			
Technical:			
Not Applicable.			

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603755N/SHIP SELF DEFENSE			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	13.240	9.447	8.897	11.392	12.579	13.678	13.727
2133/QRCC/RAWG	3.577	3.488	3.491	3.555	3.564	3.670	3.715
2184 Force AAW Coord. Tech. (FACT)	9.663	5.959	1.989	2.005	3.006	10.008	10.012
3160 Ocean Surveillance	0.000	0.000	3.417	5.832	6.009	0.000	0.000
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
<p>This program incorporates efforts dedicated to the enhancement of ship defense against Anti-Air Warfare (AAW) and other evolving threats. Its primary focus is on the development of technologies, systems, and procedures necessary to defeat the evolving Anti-Ship Cruise Missile (ASCM) threat and then expands to allow for application of these technologies in other warfighting areas. These projects focus on ship defense improvements through the development of advanced concepts and capabilities that will enhance both defense in depth of ships in a force and self defense of individual ships in a littoral war-fighting environment. Quick Reaction Combat Capability (QRCC), Project 2133, provides advanced concepts and technology developments for the multi-sensor integration of ship detection equipment, integration and coordination of ship self defense weapons, and coordination of hardkill and softkill assets to improve individual ship self defense capabilities against the ASCM threat. The Requirements and Analysis Working Group (RAWG) provides independent analysis for a variety of combat system trade-offs, ship class performance studies, and force protection strategic plan development. Force Anti-Air Warfare Coordination Technology (FACT), Project 2184, demonstrates AAW concepts and capabilities that will enhance the AAW warfighting ability of ships and aircraft and enable the coupling of the Force into a single, distributed weapon system through more effective use of tactical data, and force sensors and weapons. During FY06, the Innovation Team will begin to expand the offensive counter air (OCA) capabilities developed for the Joint Targeting Attack and Assessment Capability (JTAAC) utilizing electro-optical (EO) and infrared (IR) sensors to include other sensors. During FY07-FY09, under the Ocean Surveillance Initiative, Project 3160, the Innovation Team will continue leveraging their expertise in resolving complex warfighter issues as well as the end to end capability realized in previous products to develop a prototype focused on creating a coherent and consistent surface track picture. JTAAC brought innovative technology to offensive counter air and the Ocean Surveillance Initiative will extend those advancements to the maritime offensive counter air and surface track picture domains.</p>							

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 1 of 25)

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROJECT NUMBER AND NAME 2133/Quick Reaction Combat Capability/Req and Analysis W/G				
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	3.577	3.488	3.491	3.555	3.564	3.670	3.715
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Quick Reaction Combat Capability (QRCC) provides advanced concepts and technology developments for the multi-sensor integration of ship detection equipment, integration and coordination of ship self defense weapons, and coordination of hardkill and softkill assets to improve individual ship self defense capabilities against the Anti-Ship Cruise Missile (ASCM) threat. The funding for the Self Defense Test Ship is for the dry-docking and overhaul of the Self Defense Test Ship to extend the service life for another 4 years. The Requirements and Analysis Working Group (RAWG) provides independent analysis for a variety of combat system trade-offs, ship class performance studies, and force protection strategic plan development.

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 2 of 25)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification (Page 1)		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 2133/Quick Reaction Combat Capability/Requirements and Analysis Working Grp

B. Accomplishments/Planned Program

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	3.577	0.000	0.000	
RDT&E Articles Quantity				

The RAWG will provide POM/PR process analysis, ship class, and component systems capabilities in support of Resource Manager's POM /PR budget process. The RAWG will provide analysis for a variety of combat systems trade-off and force protection strategic development. The RAWG will continue to respond to the PEO and OPNAV sponsors emergent tasking and participate and attend PRA working group meetings.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	3.488	0.000	
RDT&E Articles Quantity				

The RAWG will analyze Ship Self Defense PRA capabilities. Analysis will include baseline PRA requirements, excursions based on raid size, environment, and other operational considerations. The RAWG will respond to the PEO and OPNAV sponsors emergent tasking and participate and attend PRA working group meetings.

	FY 05	FY 06	FY 07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	3.491	
RDT&E Articles Quantity				

The RAWG will continue leadership and management of the Common ASCM Threat Characterization process for PEO IWS. The RAWG will continue to analyze Ship Self Defense PRA capabilities and respond to the PEO and OPNAV sponsors emergent tasking and participate and attend PRA working group meetings.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: FEBRUARY 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group
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C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President Budget	3.584	3.542	3.526
FY 2007 President Budget	3.577	3.488	3.491
Total Adjustments	-0.007	-0.054	-0.035

Summary of Adjustments

Other general provisions	-0.005	-0.001	-0.009
Programmatic Changes	-0.002	-0.053	-0.042
Revised rates & inflation indices	0.000	0.000	0.016

Subtotal	-0.007	-0.054	-0.035
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Schedule:

N/A

Technical:

N/A

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 4 of 25)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:	FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group	
D. OTHER PROGRAM FUNDING SUMMARY: N/A			
E. ACQUISITION STRATEGY: N/A			
F. MAJOR PERFORMERS:			
Dahlgren/ NSWCDD - Responsible for overall combat systems performance analysis for Navy ship classes.			

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603755N/SHIP SELF DEFENSE			2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														0.000
Ancillary Hardware Development														0.000
Component Development														0.000
Ship Integration														0.000
Ship Suitability														0.000
Systems Engineering	WX	Dahlgren, NSWC DD	4.256	3.577	10/04	3.488	10/05	3.491	10/06			Continuing	Continuing	
Training Development														0.000
Licenses														0.000
Tooling														0.000
GFE														0.000
Award Fees														0.000
Subtotal Product Development			4.256	3.577		3.488		3.491				Continuing	Continuing	
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	0.000	0.000
Remarks:														

R-1 SHOPPING LIST - Item No 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RD&E, N / BA-4			0603755N/SHIP SELF DEFENSE			2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total P Y s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.000										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	0.000	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support													0.000	
Travel													0.000	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Total Cost			4.256	3.577		3.488		3.491		0.000		Continuing	14.812	
Remarks:														

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile: NOT APPLICABLE																							DATE: FEBRUARY 2006					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4											PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE								PROJECT NUMBER AND NAME 2133 QRCC/RAWG									
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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																												
Test & Evaluation Milestones																												
Production Milestones																												
Deliveries																												

R-1 SHOPPING LIST - Item No.70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail NOT APPLICABLE						DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 2133 Quick Reaction Combat Cap/Req & Analysis Working Grp				
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
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.70

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 9 of 25)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	9.663	5.959	1.989	2.005	3.006	10.008	10.012
RDT&E Articles Qty	n/a	n/a	n/a	n/a	n/a	n/a	n/a

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Force Anti-Air Warfare Technology (FACT) Program is an advanced development effort designed to demonstrate Force Anti-Air Warfare (AAW) concepts and capabilities that will significantly improve our Force defense in depth, including both local area and self defense capabilities against current and future AAW threats. FACT improvements are designed to enhance the AAW warfighting ability of ships and aircraft and to enable coupling of the Force into a single, AAW distributed weapon system and towards more effective use of tactical data and the cooperative use of all the force sensors and weapons. These capabilities will provide the ship defense flexibility needed to meet the threat brought about by increasing numbers of highly sophisticated weapons held by potentially hostile third world countries. FACT defines requirements and develops prototype systems or modifications to existing systems to test new concepts for the coordination of Force operations. FACT is a model Sea Enterprise effort that consistently delivers advanced war-fighting capability that addresses current Fleet shortfalls and needs quickly and cost effectively. Some examples of prototype systems now in production are AN/SPS-48C Detection Data Converter, AN/SPS-48E Environmental Control Feature, Shipboard Gridlock System Automatic Correlation (SGS/AC) and Dial-a-Track Quality (Link-11 Quality Selection). Other FACT developments nearing production stages are the Automatic Identification System (Auto-ID) and the Multi-Frequency Link-11 capability; Dual Net Multi-Frequency Link-11 (DNMFL); Force Threat Evaluation Weapons Assignment (FTEWA); and the prototype Area Air Defense Commander (AADC) and the Joint Targeting Attack and Assessment Capability (JTAAC). During FY06, the Innovation Team will begin to expand the offensive counter air (OCA) capabilities developed for JTAAC utilizing electro-optical (EO) and infrared (IR) sensors to include other sensors. This effort will be a complement to the JTAAC, leveraging the technologies and end to end capability realized by JTAAC to inform future maritime offensive counter air efforts. The Team will continue development and transition of the JTAAC initiative and begin the follow-on FACT initiative in FY10.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology

B. Accomplishments/Planned Program

	FY05	FY06	FY07	
Accomplishments/Effort/Subtotal Cost	9.663	5.959	1.989	
RDT&E Articles Quantity				

On going development of current FACT initiative and support continuing development/demonstration and transition of JTAAC within the USN. Conduct critical FACT initiative proof of concept experiments. Provide top level programmatic support, technical analysis and assist in the development processes, procedures and documentation that impact the execution of the FACT program requirements.

	FY05	FY06	FY07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

	FY05	FY06	FY07	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <p style="text-align: center;">FEBRUARY 2006</p>																																								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology																																								
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: right;">FY 2005</th> <th style="width: 10%; text-align: right;">FY 2006</th> <th style="width: 10%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 2006 President's Budget</td> <td style="text-align: right;">5.818</td> <td style="text-align: right;">6.050</td> <td style="text-align: right;">7.408</td> </tr> <tr> <td>FY 2007 President's Budget</td> <td style="text-align: right;">9.663</td> <td style="text-align: right;">5.959</td> <td style="text-align: right;">1.989</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">3.845</td> <td style="text-align: right; border-top: 1px solid black;">-0.091</td> <td style="text-align: right; border-top: 1px solid black;">-5.419</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td>Other general provisions</td> <td style="text-align: right;">-0.154</td> <td style="text-align: right;">-0.091</td> <td style="text-align: right;">-0.012</td> </tr> <tr> <td>Programmatic Changes</td> <td style="text-align: right;">3.999</td> <td></td> <td style="text-align: right;">-5.420</td> </tr> <tr> <td>Revised rates & inflation indices</td> <td></td> <td></td> <td style="text-align: right;">0.013</td> </tr> <tr> <td>Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">3.845</td> <td style="text-align: right; border-top: 1px solid black;">-0.091</td> <td style="text-align: right; border-top: 1px solid black;">-5.419</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule: Not Applicable.</p> <p style="margin-top: 20px;">Technical: Not Applicable.</p>				FY 2005	FY 2006	FY 2007	Funding:				FY 2006 President's Budget	5.818	6.050	7.408	FY 2007 President's Budget	9.663	5.959	1.989	Total Adjustments	3.845	-0.091	-5.419	Summary of Adjustments				Other general provisions	-0.154	-0.091	-0.012	Programmatic Changes	3.999		-5.420	Revised rates & inflation indices			0.013	Subtotal	3.845	-0.091	-5.419
	FY 2005	FY 2006	FY 2007																																							
Funding:																																										
FY 2006 President's Budget	5.818	6.050	7.408																																							
FY 2007 President's Budget	9.663	5.959	1.989																																							
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Summary of Adjustments																																										
Other general provisions	-0.154	-0.091	-0.012																																							
Programmatic Changes	3.999		-5.420																																							
Revised rates & inflation indices			0.013																																							
Subtotal	3.845	-0.091	-5.419																																							

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology
D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable		
E. ACQUISITION STRATEGY: Not Applicable		
F. MAJOR PERFORMERS: APL/Laurel, MD	11/02	

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603755N/SHIP SELF DEFENSE				2184 Force AAW Coordination Technology							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/Laurel, MD	89.873	9.663	11/04	5.959	11/05	1.989	11/06			CONT	CONT	
Systems Engineering		SPAWAR, S.D.	0.150										0.150	
Systems Engineering		SPAWAR NORFOLK	0.417										0.417	
Systems Engineering		PUGET SOUND BOSTON	0.029										0.029	
Systems Engineering	GSA	GRCI	0.204										0.204	
Miscellaneous		Unknown	0.187										0.187	
Pontoon Barrier		Unknown	0.961										0.961	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			91.821	9.663		5.959		1.989				CONT	CONT	
Remarks:														
Development Support													0.000	
Software Development													0.000	
Integrated Logistics Support		NSWC/PHD	0.175										0.175	
Integrated Logistics Support		NSLC Mech, PA	0.005										0.005	
Integrated Logistics Support	GSA	AMERIND	0.111										0.111	
Technical Data		NSWC/DD/ Dahlgren, VA	0.150										0.150	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.441	0.000		0.000		0.000		0.000		0.000	0.441	
Remarks:														

R-1 SHOPPING LIST - Item No. 75

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 14 of 25)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603755N/SHIP SELF DEFENSE			2184 Force AAW Coordination Technology								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Operational Test & Evaluation	CPFF	APL/Laurel, MD	2.629	0.000		0.000		0.000				CONT	CONT	
Live Fire Test & Evaluation														0.000
Test Assets														0.000
Tooling														0.000
GFE														0.000
Award Fees														0.000
Subtotal T&E			2.629	0.000		0.000		0.000				CONT	CONT	
Remarks:														
Contractor Engineering Support	CPAF	RGE, SPRINGFIELD, VA	0.006											0.006
Contractor Engineering Support	CPFF	SPA,FAIRFAX, VA	0.100											0.100
Contractor Engineering Support	CPFF	LOGICON, FALLS CHUR, VA	0.060											
Contractor Engineering Support	GSA	STRATEGIC INSIGHT, VA	0.189											
Program Management Support	GSA	DSR, FAIRFAX, VA	0.590											0.590
Program Management Support	GSA/CPFF	DELTA ARLINGTON VA	0.261	0.000		0.000		0.000				CONT	CONT	
Travel														0.000
Labor (Research Personnel)														0.000
Subtotal Management			1.206	0.000		0.000		0.000				CONT	CONT	
Remarks:														
Total Cost			96.097	9.663		5.959		1.989		0.000		CONT	CONT	
Remarks:														

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile:																								DATE: FEBRUARY 2006								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4								PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE								PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology																
Fiscal Year	2005				2006				2007				2008				2009				2010				2011							
					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
Support GWOT Operations				Continued △																												
Support Transtion on JTAAC								Begin △																								
Begin Follow-On FACT Initiative																								Begin △								

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail: NOT APPLICABLE						DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME 2184 Force AAW Coordination Technology			
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Continued Support of GWOT Operations		1Q						
Begin Transition of JTAAC Within USN			1Q					
Conclude Support of GWOT Operations (exact date unknown)								
Conclude Transition of JTAAC Within USN (exact date unknown)								
Begin Follow-On FACT Initiative							1Q	

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME 3160 Ocean Surveillance Initiative		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Project Cost				3.417	5.832	6.009	
RDT&E Articles Qty			n/a	n/a	n/a	n/a	n/a

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Innovation Program is an advanced development effort designed to demonstrate Force concepts and capabilities which significantly improve our Force defense in depth, including both local area and self defense capabilities against current and future threats. The Innovation Team has consistently provided the warfighter innovative products which resolve current complex warfighter issues quickly and cost effectively. The Innovation Team will begin expanding its focus to include maritime offensive counter air. Under the auspices of the Ocean Surveillance Initiative, this innovation cell plans to leverage technologies that they developed in the JTAAC to provide a prototype which will create a coherent surface track picture in a large area of operations (AO) enabling sustained situational understanding. Their focus will be optimizing sensor selection and configuration to reliably detect, track, and classify ships in the AO with an objective goal of attaining a tactically significant probability of detection, continuous track, and correct classification down to small and medium sized vessels in sea state 5. The Ocean Surveillance Initiative is a complement to JTAAC. The Ocean Surveillance Initiative is the natural progression for the USN to leverage the JTAAC offensive counter air end to end capability to the maritime domain.

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 3160 Ocean Surveillance Initiative

B. Accomplishments/Planned Program

	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost			3.417
RDT&E Articles Quantity			

On-going development of an Ocean Surveillance Initiative prototype which will leverage the end to end capability realized by JTAAC and have the objective goal of attaining a tactically significant probability of detection, continuous track, and correct classification of small and medium sized vessels at sea state 5. Conduct critical experiments in support of the Ocean Surveillance Initiative. Provide top level programmatic support, technical analysis and assist in the development processes, procedures and documentation that impact the execution of the Ocean Surveillance Initiative.

	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost			0.000
RDT&E Articles Quantity			

	FY05	FY06	FY07
Accomplishments/Effort/Subtotal Cost			
RDT&E Articles Quantity			

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE	PROJECT NUMBER AND NAME 3160 Ocean Surveillance Initiative																																
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: right;">FY 2005</th> <th style="width: 10%; text-align: right;">FY 2006</th> <th style="width: 20%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>FY 2006 President's Budget</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>FY 2007 President's Budget</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">3.417</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">3.417</td> </tr> <tr> <td colspan="4" style="padding-top: 20px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 40px;">Programmatic Changes</td> <td></td> <td></td> <td style="text-align: right;">3.393</td> </tr> <tr> <td style="padding-left: 40px;">Revised rates & inflation indices</td> <td></td> <td></td> <td style="text-align: right;">0.024</td> </tr> <tr> <td style="padding-left: 40px;">Subtotal</td> <td></td> <td></td> <td style="text-align: right; border-top: 1px solid black;">3.417</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule: Not Applicable.</p> <p style="margin-top: 20px;">Technical: Not Applicable.</p>				FY 2005	FY 2006	FY 2007	FY 2006 President's Budget	0.000	0.000	0.000	FY 2007 President's Budget	0.000	0.000	3.417	Total Adjustments	0.000	0.000	3.417	Summary of Adjustments				Programmatic Changes			3.393	Revised rates & inflation indices			0.024	Subtotal			3.417
	FY 2005	FY 2006	FY 2007																															
FY 2006 President's Budget	0.000	0.000	0.000																															
FY 2007 President's Budget	0.000	0.000	3.417																															
Total Adjustments	0.000	0.000	3.417																															
Summary of Adjustments																																		
Programmatic Changes			3.393																															
Revised rates & inflation indices			0.024																															
Subtotal			3.417																															

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603755N/SHIP SELF DEFENSE			3160 Ocean Surveillance Initiative								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/Laurel, MD	0.000		n/a		n/a	3.417	11/06			19.231	19.231	
Systems Engineering														
Systems Engineering														
Systems Engineering														
Systems Engineering														
Miscellaneous														
Pontoon Barrier														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development								3.417				19.231	19.231	
Remarks:														
Development Support														
Software Development														
Integrated Logistics Support														
Integrated Logistics Support														
Integrated Logistics Support														
Technical Data														
GFE														
Award Fees														
Subtotal Support														
Remarks:														

R-1 SHOPPING LIST - Item No. 70

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-4			0603755N/SHIP SELF DEFENSE			3160 Ocean Surveillance Initiative								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E														
Remarks:														
Contractor Engineering Support														
Contractor Engineering Support														
Contractor Engineering Support														
Contractor Engineering Support														
Program Management Support														
Program Management Support														
Travel														
Labor (Research Personnel)														
Subtotal Management														
Remarks:														
Total Cost								3.417		0.000		19.231	19.231	
Remarks:														

R-1 SHOPPING LIST - Item No. 70

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile:																							DATE: FEBRUARY 2006							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4										PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE										PROJECT NUMBER AND NAME 3160 Ocean Surveillance Initiative										
Fiscal Year	2005				2006				2007				2008				2009				2010				2011					
	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		
Develop Ocean Surveillance Prototype									Begin △													End △								

R-1 SHOPPING LIST - Item No. 70

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0603790N
PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total PE	10,017	10,174	9,784	10,171	10,315	10,556	10,813

2293 NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)	10,017	10,174	9,784	10,171	10,315	10,556	10,813
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A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In accordance with Title 10 United States (U.S.) Code Section 2350a, this Program Element provides funding for research and development (R&D) programs with approved allies under international agreements. These funds can only be applied to work efforts in the U.S., and the Under Secretary of Defense, Acquisition and Technology (USD,A&T) must approve each international agreement. The program provides funds for multiple projects under separately approved international agreements as well as funds that support the establishment of such agreements. Each international agreement is summarized in a separate Summary Statement of Intent (SSOI) that also states why the project serves to increase the defense capabilities of the U.S.

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0603790N
PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

B. PROGRAM CHANGE SUMMARY:

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2006 President's Budget Submission	10,053	10,335	10,563
Congressional Undistributed Reductions/Rescissions	-8	-161	0
Functional Realignment for OPNAV Program Support Costs	0	0	-183
FY 2005 SBIR	-30	0	0
Program Adjustments	2	0	-621
Rate Adjustments	0	0	25
FY 2007 President's Budget Submission	10,017	10,174	9,784

PROGRAM CHANGE SUMMARY EXPLANATION:

Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

E. PERFORMANCE METRICS:

The intent of the North Atlantic Treaty Organization (NATO) cooperative R&D program is to provide "start-up" funds for projects seeking allied contributions into cooperative research and development projects with the U.S. The primary metric used in the program is foreign contributions into projects supported by the program. The performance goal is met if total foreign contributions into projects exceed total NATO cooperative R&D program funds by over 100%.

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0603790N PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT
PROJECT NUMBER: 2293 PROJECT TITLE: NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
2293 NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)	10,017	10,174	9,784	10,171	10,315	10,556	10,813

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In accordance with Title 10 U.S. Code Section 2350a, this project provides funding for research and development projects with approved allies under international agreements. These funds can only be applied to work efforts in the U.S., and the USD,A&T must approve each international agreement. The program provides funds for multiple projects under separately approved international agreements as well as funds that support the establishment of such agreements. Each international agreement is summarized in a separate SSOI which also states why the project serves to increase the conventional defense capabilities of the U.S.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
COOPERATIVE PROJECTS	10,017	10,174	9,784

FY 2005 Accomplishments:

- Continued to support the Advance Radar Technology Integrated System Testbed cooperative project between the U.S. and the United Kingdom (U.K.).
- Continued to support the Multilateral Memorandum of Understanding (MOU) for Interoperable Networks for Secure Communication.
- Continued to support the Submarine Sonar Advanced Processing Build - Acoustic Repaid Commercial Off the Shelf (COTS) Insertion (APB-ARCI) cooperative project between the U.S. and the U.K.
- Continued to support the Unmanned Undersea Vehicles (UUV), Intelligence, Surveillance and Reconnaissance (ISR) and Anti-Submarine Warfare (ASW) cooperative project between the U.S. and the U.K.
- Continued to support the Software Radio cooperative project between the U.S. and Japan.

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BUDGET ACTIVITY: 04

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: 2293

PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

PROJECT TITLE: NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)

- Continued to support the Advanced Hull Materials and Structures Technology (AHM&ST) cooperative project between the U.S. and Japan.
- Continued to support the Multilateral cooperative project concerning Coalition Maritime Missile Defense BMC4I Architecture Definition.
- Continued to support the Maritime Missile Defense Modeling and Simulation cooperative project between the U.S. and the U.K.
- Continued to support the Multilateral MOU for Standard Missile.
- Continued to support the Enhanced Undersea Weapons Effectiveness and Ship Survivability through the Application of Validated Computer Codes cooperative project between the U.S. and Germany.
- Continued to provide support for the identification and development of MOUs with one or more approved major allies for the purpose of conducting cooperative research and development projects on defense equipment and munitions. These international agreements MOUs are approved by USD,A&T and are submitted in separate SSOIs.
- Supported the Six (6) Degrees of Freedom Ship Roll cooperative project between the U.S. and Italy.
- Supported the cooperative project concerning Australia United States Phased Array Radar (AUSPAR) between the U.S. and Australia.
- Supported the cooperative project between the U.S. and Singapore regarding Multi-Statics Sonar.
- Supported the cooperative project between the U.S. and U.K. regarding Next Generation Countermeasures.
- Supported the Interoperability Study between the U.S. and the U.K.

FY 2006 Plans:

- Continue all efforts of FY05, less those noted as complete.
- Support the cooperative project between the U.S. and U.K. regarding Fiber Laser Sensors.
- Support the cooperative project between the U.S. and Japan regarding S-Bank Radar.
- Support the cooperative project between the U.S. and Japan regarding Open Architecture.
- Support the cooperative project between the U.S. and Australia regarding the Australia/U.S. Distributed Engineering Plan (AUSDEP).

FY 2007 Plans:

- Continue all efforts of FY06, less those noted as complete.

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BUDGET ACTIVITY: 04

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: 2293

PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

PROJECT TITLE: NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)

C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:

PE 0605853N (Management, Technical and International Support)

NON-NAVY RELATED RDT&E:

PE 0605130D (Foreign Comparative Testing)

D. ACQUISITION STRATEGY:

Not applicable.

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FY 2007 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN
Exhibit R-3

DATE: Feb 2006

BA: 04 PROGRAM ELEMENT: 0603790N
PROJECT ELEMENT TITLE: NATO Research and Development

Project Number: R2293
Project Title: NATO
Cooperative R&D

A. PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>
a. Cooperative Research and Development	10,017	10,174	9,784	10,171

B. BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION:

PERFORMING ORGANIZATIONS

Contractor/ Government Performing <u>Activity</u>	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	<u>FY 2005</u> <u>Budget</u>	<u>FY 2006</u> <u>Budget</u>	<u>FY 2007</u> <u>Budget</u>	<u>FY 2008</u> <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
Product Development										
NAVSEA	PD				2,448	2,070			CONT.	CONT.
NSWC	WX				889	1,600			CONT.	CONT.
NUWC	WX				815	0			CONT.	CONT.
JTRS-JPO	MP				1,200	0			CONT.	CONT.
PEO(LMW)	PD				2,350	500			CONT.	CONT.
Withhold					2					
Miscellaneous					2,313	6,004	9,784	10,171	CONT.	CONT.
Total					10,017	10,174	9,784	10,171	CONT.	CONT.

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FY 2007 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN
Exhibit R-3

DATE: Feb 2006

BA: 04 PROGRAM ELEMENT: 0603790N
PROJECT ELEMENT TITLE: NATO Research and Development

Project Number: R2293
Project Title: NATO
Cooperative R&D

Contractor/ Government Performing <u>Activity</u> Support and Management	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	FY 2005 <u>Budget</u>	FY 2006 <u>Budget</u>	FY 2007 <u>Budget</u>	FY 2008 <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
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Contractor/ Government Performing <u>Activity</u> Test and Evaluation	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	FY 2005 <u>Budget</u>	FY 2006 <u>Budget</u>	FY 2007 <u>Budget</u>	FY 2008 <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
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GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 2005 <u>Budget</u>	FY 2006 <u>Budget</u>	FY 2007 <u>Budget</u>	FY 2008 <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
Subtotal Product Development	10,017	10,174	9,784	10,171	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	10,017	10,174	9,784	10,171	CONT.	CONT.

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification				DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		0603795N/Land Attack Technology					
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	98.435	73.983	18.571	29.797	40.089	29.065	18.414
2156/Naval Surface Fire Support (NSFS)	30.605	10.687	16.307	28.436	38.459	27.407	16.729
2325/Naval Fires Control System (NFCS)	6.063	3.296	2.264	1.361	1.630	1.658	1.685
9051/Advance Medium Caliber Gun Demonstrator (AMCGD) ⁽¹⁾	3.302	0.000	0.000	0.000	0.000	0.000	0.000
9359/Affordable Weapon System (AWS) ⁽¹⁾	47.505	0.000	0.000	0.000	0.000	0.000	0.000
9542/ 57mm Gun Qualification and Test ⁽¹⁾	10.960	0.000	0.000	0.000	0.000	0.000	0.000
9999/Congressional Adds ²	0.000	60.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles & Cost (see attached projects)							

⁽¹⁾ Funding includes the following FY05 Congressional Adds: Advanced XLR Medium Gun Demo Project 9051 - \$3.302M; Affordable Weapon System Project 9359 - \$19.467M; 57mm Gun Qualification & Test - Project 9542 - \$10.960M

⁽²⁾ Funding includes the following FY06 Congressional Adds: Advanced XLR Medium Gun Demo Project 9051C - \$2.400M; Affordable Weapon System Project 9359C - \$35.000M; 57mm Gun Qualification & Test - Project 9828N - \$8.400M; Millennium Gun System - Project 9827N - \$4.000M; Ballistic Trajectory Extended Range Munition - Project 9826N - \$10.2M

A. (U) Mission Description and Budget Item Justification: The Naval Surface Fire Support (NSFS) mission supports the Land Attack Technology program element. To meet the United States Marine Corp (USMC) requirements for NSFS, the Navy is developing a variety of weapons systems including both gun and missile systems that can provide the required range, lethality, accuracy, and responsiveness. The NSFS program (**Project 2156**) develops gun systems including the 5"/62 gun (a modification of the existing 5"/54 gun) and a 5" Extended Range Munition (ERM) with a coupled Global Positioning System (GPS) and an Inertial Navigation System (INS). This munition will have the capability to deliver its payload to a range in excess of current conventional ammunition with associated propelling charge improvements. The ERM development will leverage technology and "lessons learned" from current and previous extended range munition efforts. The Naval Fires Control System (NFCS) (**Project 2325**) develops systems that will automate shipboard land attack battle management duties to be interoperable and consistent with joint C4ISR systems. These shipboard weapon systems will significantly improve the Navy's ability to support OMFTS. The Advanced Medium Caliber Gun System (AMCGD) (**Project 9051 and 9051C**) is a demonstration to investigate an advanced gun design encompassing modularity, scalability, compactness, and long range. The Ballistic Trajectory Extended Range Munition (BTERM) (**Project 9826N**) - BTERM is a 5" gun-launched projectile employing a ballistic trajectory enroute to the target. BTERM utilizes rocket assisted propulsion to achieve extended ranges and a coupled GPS/INS guidance system for improved accuracy over current 5" ballistic ammunition. The Affordable Weapons System (AWS) (**Project 9359 and 9359C**) is a COTS based Land Attack and Strike missions missile that can loiter and be directed to the target by the shooter or a Forward Observer (FO/FAC). The Millennium Gun System (MGS) (**Project 9827N**) - The Millennium Gun System supports the investigation of a 35mm minor caliber gun mount and associated munitions for ship self defense mission area capability in USN Surface Ships. The 57mm Gun qualification and Test (**Project 9542 and 9828N**) - The 57mm Gun System is being procured and installed on US Coast Guard Integrated Deepwater System Cutters and is planned to be installed on other Naval platforms. Effort encompasses complete qualification and fire control system development for 57mm MK 110 Mod 0 Gun System.

R-1 SHOPPING LIST - Item No. 74

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology		PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	30.605	10.687	16.307	28.436	38.459	27.407	16.729
RDT&E Articles Qty					60		

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The NSFS program develops gun systems including the 5"/62 gun (a modification of the existing 5"/54 gun) and a 5" Extended Range Munition (ERM) with a coupled Global Positioning System (GPS) and an Inertial Navigation System (INS). This munition will have the capability to deliver its payload to a range in excess of current conventional ammunition with associated propelling charge improvements. The ERM development will leverage technology and "lessons learned" from current and previous extended range munition efforts. In FY06, a contract will be awarded for the 5" guided projectile for System Development and Demonstration (SDD). The SDD continues in FY07 leading to an LRIP decision in FY10 and Initial Operational Capability in FY11.

R-1 SHOPPING LIST - Item No. 74

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 2 of 22)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support

B. Accomplishments/Planned Program

	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	10.698	0.000	0.000
RDT&E Articles Quantity			

Continued ERGM development. Addressed technical issues and continued component testing, qualification efforts and Land Based Flight Tests. ERGM contract will close in 3Q of FY06.

	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	18.035	0.000	0.000
RDT&E Articles Quantity			

Contract awarded 3Q FY04 for the BTERM II demonstration. Began component design efforts in FY04. Continued round design efforts in FY05 leading to the start of All-up round flight tests. Complete demonstration phase at end of CY05.

	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.000	10.347	16.307
RDT&E Articles Quantity			

A contract for ERM SDD will be awarded in 3Q FY06 leading to an FY11 IOC. Component design will begin in FY06 and continue through FY07.

R-1 SHOPPING LIST - Item No. 74

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 3 of 22)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology
	PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support

B. Accomplishments/Planned Program (Cont.)

	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.335	0.340	0.000
RDT&E Articles Quantity			

Continued development of the EX-167 Propelling Charge. Complete Technical Data Package and continue qualification efforts until the end of FY06.

	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	1.318	0.000	0.000
RDT&E Articles Quantity			

Continued development, integration and testing of 5" MK 45 modification and GFM preparation in support of the Extended Range Munition IOC .

R-1 SHOPPING LIST - Item No. 74

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support	
B. Accomplishments/Planned Program (Cont.)			
	FY 05	FY06	FY07
Accomplishments/Effort/Subtotal Cost	0.219	0.000	0.000
RDT&E Articles Quantity			
<p>Continued development and testing of the Gun Fire Control Modification and required interfaces.</p>			

R-1 SHOPPING LIST - Item No. 74

UNCLASSIFIED

Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 5 of 22)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
FY06 President's Budget:		31.239	10.849	17.912
FY07 President's Budget:		30.605	10.687	16.307
Total Adjustments		-0.634	-0.162	-1.605
Summary of Adjustments:				
Other general provisions		-0.024	-0.162	
SBIR		-0.571		
Other misc. changes		-0.039		-0.113
Programmatic Changes		0.000		-1.492
		-0.634	-0.162	-1.605
<p>The Land Attack Technology PE comprises multiple programs to provide a Naval Surface Fire Support capability. The challenge is the coordinated delivery of the Mk 45 Mod 4 Gun System, extended range munition capability, and the Mk 160 Fire Control upgrades. These together provide a significant enhancement to Naval Surface Fire Support. The ERGM program was restructured reflecting schedule delays associated with test failures, budget shortfalls, and schedule delays. The contractor began the ERGM LBFT series in FY04. A contract was awarded in 3Q FY04 for the BTERM II demonstration.</p>				
<p>Technical: N/A</p>				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support
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D. OTHER PROGRAM FUNDING SUMMARY:

	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>FY2008</u>	<u>FY2009</u>	<u>FY2010</u>	<u>FY2011</u>	<u>Complete</u>	<u>Cost</u>
PAN,MC BL, 025300	0.000	0.000	0.000	0.000	0.000	70.783	122.468	CONT	
WPN BLI:4217, E5004	15.047	8.302	1.676	0	0	0	0	CONT	

E. ACQUISITION STRATEGY:

The ERM program will be executed via a contract award in FY06. It is expected that technology and "lessons learned" will be leveraged from other guided munitions efforts to provide a relatively low risk approach in meeting the ERM FY11 IOC requirement. The gun is being developed under a sole source arrangement with United Defense, the sole source manufacturer of the 5" MK 45 Gun Mount. A compliant open architecture (OA) Fire Control System (MK 160) is currently being developed by the Naval Surface Warfare Center, Dahlgren.

F. MAJOR PERFORMERS:

Prime Contractor for ERM: TBD

Prime Contractor for ERGM development: Raytheon Missile Systems located in Tucson, AZ. Raytheon subsequently purchased TI and moved operations to the Tucson location.

Prime Contractor for Gun development: United Defense Limited Partnership (UDLP) located in Minneapolis, MN. Contract awarded to UDLP in February 1996 to modify the existing 5"/54 gun to a 5"/62 Gun to accommodate handling, loading, and firing the ERGM round.

Prime Contractor for BTERM II development: Alliant TechSystems located in Woodland Hills, CA.

Primary Navy Warfare Center: Naval Surface Warfare Center (NSWC) located in Dahlgren, VA. Will provide technical assistance to the PMO, input into Integrated Product Teams, and will be responsible for Ship Based Developmental Flight testing and evaluation.

R-1 SHOPPING LIST - Item No. 74

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N / BA-4			0603795N/Land Attack Technology				2156/Naval Surface Fire Support					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Privatization	CPAF	UDLP, Louisville, KY	3.908									
Primary Hardware Development	CPIF/FF	UDLP, Minneapolis, MN (C5223)	58.738	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	59.657
	CPFF	UDLP, Minneapolis, MN (C4101)	8.954	0.918	11/04	0.000	11/05	0.000	11/06	CONT	CONT	48.414
	CPAF/IF	Raytheon, Tucson, AZ	177.699	10.698	11/04	0.000	11/05	0.000	N/A	CONT	CONT	182.862
	WR	NSWC Dahlgren, VA	56.867	0.000		0.000	N/A	0.000	N/A			N/A
	WR	NSWC Indian Head, MD	15.088	0.000		0.250						N/A
	WR	NSWC Port Hue., CA	25.386	0.000								N/A
BTERM II Demonstration	CPIF/AF	ATK, Woodland Hills, CA	7.913	8.313	11/04	0.000	N/A	0.000	N/A	CONT	CONT	16.226
	WX/WR	NSWC (Various)	0.190	1.432	11/04	0.000	N/A	0.000	N/A	CONT	CONT	N/A
ERM SDD	TBD	TBD	0.000	0.000	N/A	8.298	1/06	13.483	11/06	CONT	CONT	TBD
Systems Engineering	WX/WR	NSWC (Various)	15.962	0.318	11/04	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Systems Engineering	VAR	Miscellaneous	33.281	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Award Fees	CPAF/IF	Raytheon, Tucson, AZ	3.369	0.000	11/04	0.000	N/A	0.000	N/A	CONT	CONT	4.915
	CPIF/AF	ATK, Woodland Hills, CA	0.000	0.832								
Subtotal Product Development			407.355	22.511		8.548		13.483		CONT	CONT	CONT
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support	WR/WX	NSWC (Various)	8.659	0.265	11/04	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Configuration Management												
Technical Data												
GFE												
Subtotal Support			8.659	0.265		0.000		0.000		CONT	CONT	CONT

R-1 SHOPPING LIST - Item No. 74

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 8 of 22)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME				
RDT&E, N / BA-4				0603795N/Land Attack Technology				2156/Naval Surface Fire Support				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC (Various)	34.844	2.969	11/04	0.460		0.850		CONT	CONT	N/A
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			34.844	2.969		0.460		0.850		CONT	CONT	N/A
Contractor Engineering Support												
Government Engineering Support	WR/WX	NSWC (Various)	16.995	0.954	11/04	0.852	11/05	0.800	11/06	CONT	CONT	N/A
Project Engineering Support	WR/WX	NSWC (Various)	6.669	1.272	11/04	0.000	11/05	0.000	11/06	CONT	CONT	N/A
Program Management Support	WR/WX	Various	12.047	2.534	11/04	0.777	11/05	1.124	11/06	CONT	CONT	N/A
Travel	PD	NAVSEA HQ	1.028	0.100	VAR	0.050	VAR	0.050	VAR	CONT	CONT	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			36.739	4.860		1.679		1.974		CONT	CONT	N/A
Total Cost			487.597	30.605		10.687		16.307		CONT	CONT	CONT
Remarks:												

R-1 SHOPPING LIST - Item No. 74

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Exhibit R-2a, RD TEN Project Justification
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EXHIBIT R-4, Schedule Profile														DATE: February 2006															
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NAME AND NUMBER					PROJECT NAME AND NUMBER																			
RDTE&E, N / BA-4					0603795N/Land Attack Technology					2156/Naval Surface Fire Support																			
D. (U) Schedule Profile:																													
		FY05				FY06				FY07				FY08				FY09				FY10				FY11			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Extended Range Guided Munition (ERGM)																													
Milestones	SDD																												
Design Development	Land Based Flight Tests																												
Flight Tests	AUR Qual Tests																												
Ballistic Trajectory Extended Range Munition (BTERM) II																													
Milestones	Demonstration																												
Design	Flight																												
Flight Tests																													
Extended Range Munition (ERM)																													
Milestones	SDD Contract Award																												
Design Development	SDD Component & AUR Quals																												
Flight Tests	Land Based Flight Tests																												
Prop Charge Development / Tests																													
EX 45 5"/62 Mod 4 Gun																													
Milestones																													
Tests																													
Production																													
GWS Development																													
Tech Demos																													
Fire Control System Upgrade (MK 160 Mod 8)																													
Design Development & Tests																													

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603795N/Land Attack Technology				2156/Naval Surface Fire Support		
Schedule Profile for NSFS Munition	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
ERGM							
Systems Development & Demonstration	1Q-4Q	1Q-3Q					
Land Based Flight Test Series	1Q-4Q	1Q-3Q					
Unitary Warhead Flight Test							
Component & All-Up Round Qualifications (Part of SDD)	1Q-4Q	1Q-3Q					
Develop Testing (DT)/Operational Testing (OT)							
Operational Evaluation (OPEVAL) Rounds Decision							
Operational Evaluation (OPEVAL) Award							
LRIP Decision							
LRIP Deliveries							
MS C							
IOC							
BTERM II⁽¹⁾							
BAA Contract Award							
Demonstration Phase	1Q-4Q	1Q-4Q					
Flight Tests	3Q-4Q	1Q-4Q					
ERM (Includes Prop Charge)							
SDD Contract Award		3Q					
Land Based Flight Test				3Q-4Q	1Q-2Q		
Component & All-Up Round Qualifications (Part of SDD)		3Q<				>3Q	
Technical Evaluation (TECHEVAL)						3Q	
Operational Evaluation (OPEVAL)						3Q	
LRIP Decision						4Q	
LRIP Deliveries							4Q
MS C						4Q	
PROPELLING CHARGE (for ERM)		3Q<				>3Q	
IOC							4Q
EX 45 5"/62 MOD 4							
Development Testing (DT) (Conventional Ammo)							
Operational Test (OT) (Conventional Ammo)							
MS III							
GWS Development & Integration for ERM			1Q<			> 4Q	

⁽¹⁾ BTERM II schedule is in PU 9052

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Exhibit R-2a, RD TEN Project Justification
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME 2325/Naval Fires Control System		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY2011
Project Cost	6.063	3.296	2.264	1.361	1.630	1.658	1.685
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification: Naval Fires Control System (NFCS) covers the mission planning and coordination for current and future Naval Surface Fire Support system requirements. NFCS will plan, coordinate and manage the firing of the new Naval Surface Fires Support (NSFS) weapon systems including the 5"/62 caliber gun and Conventional Munitions. The NFCS phase I will be interfacing with the Advanced TOMAHAWK Weapons Control Systems (ATWCS) and the Tactical TOMAHAWK Weapons Control Systems (TTWCS) in order for the NFCS to share the Advanced Tactical Display Console (ATDC) with the ATWCS and TTWCS. Naval Surface Fire Support (NSFS) functionality and hardware/software improvements to incorporate OPEVAL deficiencies were done in FY05. The NFCS phase II functionality (Battle Force Tactical Trainers (BFTT) integration, Massing of fires, Surface Fires Coordination, improved air de-confliction) will be developed and implemented in FY06 throughout the FYDP.

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Exhibit R-2a, RD TEN Project Justification
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2325/Naval Fires Control System	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	3.846	2.259	1.460
RDT&E Articles Quantity			
Funding provides software and system engineering analysis and development, reuse and integration of government and commercial computer programs to support extended range munitions and other naval weapon applications.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.400	0.188	0.103
RDT&E Articles Quantity			
Funding supports hardware configuration to support NFCS implementation. Support DT validation.			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.500	0.250	0.301
RDT&E Articles Quantity			
Funding provides Technical Direction Agent support, joint requirements investigation, Concept of Operations (CONOPs) scenario development.			

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2325/Naval Fires Control System

B. Accomplishments/Planned Program (Cont.)

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.404	0.299	0.200
RDT&E Articles Quantity			

Funding provides C4I and combat system interface investigation and analysis to include BFTT, Link 16, TTWCS and other developing C4I system and technology.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.353	0.300	0.200
RDT&E Articles Quantity			

Funding supports developmental test and evaluation, and logistics support elements development.

	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.560	0.000	0.000
RDT&E Articles Quantity			

Funding supports operational test and evaluation, and logistics support elements development.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	2325/Naval Fires Control System		
C. PROGRAM CHANGE SUMMARY:				
Funding:		FY 2005	FY 2006	FY 2007
FY06 President's Budget:		6.075	3.346	2.386
FY07 President's Budget:		6.063	3.296	2.264
Total Adjustments		-0.012	-0.050	-0.122
Summary of Adjustments				
Other general provisions		-0.012	-0.050	
Other misc. reductions				-0.022
Programmatic Changes		0.000	0.000	-0.100
Subtotal		-0.012	-0.050	-0.122
Schedule:				
<p>NFCS milestone III schedule adjustment from 4th quarter FY04 to 1st quarter FY05 was due to test ship availability for TECHEVAL and OPEVAL and software development delay. IOC schedule adjustment from 4th quarter FY04 to 3rd quarter FY05 was due to corrections of deficiencies identified by OPEVAL.</p>				
Technical:				
N/A				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 2325/Naval Fires Control System

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN BLI 5112	3.254	4.267	3.311	2.374	2.688	2.414	2.093	CONT	

E. ACQUISITION STRATEGY:

A sole source contract was awarded to GDIS for Phase 1 software development. NSWC/DD took over this function from GDIS and will remain the software developer. The hardware developer is NUWC-KP.

F. MAJOR PERFORMERS:

NSWC/DD - Technical Direction Agent, Software Development Agent and Systems Engineering Lead.
 NUWC/KP - Hardware Design Agent and Hardware Developer.
 NSWC/PHD - Test and Evaluation Agent and Integrated Logistics Support Agent.
 SPAWARSYSCEN, San Diego - Common Operating Environment (COE) and Adjunct Processor Developer.

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603795N/Land Attack Technology			2325/Naval Fires Control System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Software Development	SS/CPAF	GDIS, Arlington, VA	27.517	0.000						CONT	CONT	TBD
	SS/CPAF	LM/MDS, Valley Forge, PA	19.079	0.000						CONT	CONT	
	WR/WX	NSWC, Dahlgren, VA	8.302	3.000	10/04	2.018	10/05	1.181	10/06	CONT	CONT	
	VAR	VARIOUS	1.119							CONT	CONT	
	WR/WX	SSC/SD	4.236	0.400	10/04	0.340	10/05	0.295	10/06	CONT	CONT	
Systems Engineering	WR	SSC/SD	2.951							CONT	CONT	
	WR/WX	NSWC, Dahlgren, VA	17.105	0.916	10/04	0.200	10/05	0.100	10/06	CONT	CONT	
	SS/CP	VITRO/BAE	0.670	0.000	N/A					CONT	CONT	
	VAR	VARIOUS	1.304							CONT	CONT	
Ancillary Hardware Development	WR/WX	NUWC, Keyport Division	10.474	0.200	10/04	0.088	10/05	0.058	10/06	CONT	CONT	
	WR/WX	NSWC/PT HUE, CA	5.135	0.200	10/04	0.200	10/05	0.200	10/06	CONT	CONT	
	VAR	PMFATDS	3.576	0.000	N/A					CONT	CONT	
	SS/CPAF	JHU/APL	1.362							1.362	1.362	
	SS/CPFF	JHU/APL	0.121							CONT	CONT	
	WR	NSWC, Dahlgren, VA	2.236	0.000	N/A					CONT	CONT	
	VAR	VARIOUS	1.541	0.000	N/A					CONT	CONT	
LAM FC Hardware/Software Dev	SS/CPFF	LM/Baltimore, MD	4.181								4.181	
TERMINATED	SS/CPAF	LM/MDS, Valley Forge, PA	12.131								12.131	
	SS/CPFF	UDLP	0.455								0.455	
	WR	NSWC, Dahlgren, VA	1.162								1.162	
	WR	SSC/SD	0.486								0.486	
LAM FC Systems Engineering	SS/CPFF	JHU/APL	0.386								0.386	
TERMINATED	WR	NSWC/PT HUE, CA	0.361								0.361	
Award Fees			3.979								3.979	
Subtotal Product Development			129.869	4.716		2.846		1.834		CONT	CONT	
Remarks:												
Development Support Equipment												
Software Development		NSWC, Panama City	0.049									
Training Development	VAR	VARIOUS	0.487	0.000		0.000						
Integrated Logistics Support	VAR	VARIOUS	4.665	0.305	Various	0.090	Various	0.150	Various	CONT	CONT	
Configuration Management												
Technical Data												
GFE												
Subtotal Support			5.201	0.305		0.090		0.150		CONT	CONT	
Remarks:												

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)					DATE: February 2006							
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603795N/Land Attack Technology		2325/Naval Fires Control System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC/PT HUE, CA	5.615	0.300	10/04	0.210	10/05	0.150	10/06	CONT	CONT	
	VAR	Various	1.500									
Operational Test & Evaluation	VAR	Various	4.948	0.500	10/04	0.000	10/05	0.000	10/06	CONT	CONT	
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			12.063	0.800		0.210		0.150				
Remarks:												
BTR			0.000									
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VAR	VARIOUS	4.492	0.192	Various	0.120	Various	0.100	Various	CONT	CONT	
Travel	PD	NAVSEA HQ	0.455	0.050	Various	0.030	Various	0.030	Various	CONT	CONT	
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			4.947	0.242		0.150		0.130		CONT	CONT	
Remarks:												
Total Cost			152.080	6.063		3.296		2.264		CONT	CONT	
Remarks:												

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Exhibit R-2a, RD TEN Project Justification
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CLASSIFICATION:

EXHIBIT R-4	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA-4	PROGRAM ELEMENT NAME AND NUMBER 0603795N/Land Attack Technology	PROJECT NAME AND NUMBER 2325/Naval Fires Control System
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D. (U) Schedule Profile:

	FY05				FY06				FY07				FY08				FY09				FY10				FY11																			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q																
Naval Fires Control System (NFCS) Phase I																																												
Milestones / Reviews	★ MS III	★ IOC					★ FOT&E																																					
Design Development																																												
Tests																																												
Tests - DT/OT			△ ^{VCD}																																									
Phase II				△	Development & Implementation (includes testing)																																							▽

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME Project Unit No. 9999 Name: Congressional Adds : VARIOUS

CONGRESSIONAL ADDS:

	FY 06			
9051C				
Advanced Medium Gun Demonstrator	2.4			

The Advanced Medium Caliber Gun System (AMCGD) (Project 9051 and 9051C) is a demonstration to investigate an advanced gun design encompassing modularity, scalability, compactness, and long range.

	FY 06			
9359C				
Affordable Weapon System	35.0			

FY06 (\$35.0M): Conduct spiral 1 development of COTS based loitering missile for sea-based land attack technology. Perform land-based validation testing of spiral 1 system configuration. Perform at-sea system test on Self Defense Test Ship to validate military utility and shipboard weapon system integration.

	FY 06			
9826N				
Ballistic Trajectory Extended Range Munition Program	10.2			

The Ballistic Trajectory Extended Range Munition (BTERM) (Project 9826N) - BTERM is a 5" gun-launched projectile employing a ballistic trajectory enroute to the target. BTERM utilizes rocket assisted propulsion to achieve extended ranges and a coupled GPS/INS guidance system for improved accuracy over current 5" ballistic ammunition.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME Project Unit No. 9999Name: Congressional Adds: VARIOUS
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CONGRESSIONAL ADDS:

	FY 06			
9827N				
Millennium Gun System	4.0			

The Millennium Gun System (MGS) (Project 9827N) - The Millennium Gun System supports the investigation of a 35mm minor caliber gun mount and associated munitions for ship self defense mission area capability in USN Surface Ships.

	FY 06			
9828N				
Mk57mm gun/ammo transition and start up	8.4			

The 57mm Gun qualification and Test (Project 9542 and 9828N) - The 57mm Gun System is being procured and installed on US Coast Guard Integrated Deepwater System Cutters and is planned to be installed on other Naval platforms. Effort encompasses complete qualification and fire control system development for 57mm MK 110 Mod 0 Gun System.

	FY 06			

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N /BA-4 Demonstration and Validation

PROGRAM ELEMENT (PE) NAME AND NO.

0603851M Non-Lethal Warfare Demonstration and Validation

COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	42.536	46.902	44.815	45.613	46.261	47.264	48.261
C2319 Non-Lethal Weapons	42.536	43.302	44.815	45.613	46.261	47.264	48.261
C9999 FY06 Congressional Adds	0.0	3.600	0.0	0.0	0.0	0.0	0.0
Quantity of RDT&E Articles							

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

This program develops non-lethal weapon (NLW) systems that by their design, provide a new non-lethal capability to minimize fatal or permanent injuries and undesired damage to property and the environment. Instead, these systems are designed to stun, incapacitate, or hinder movement of individuals, crowds, or equipment. The availability of NLWs allows commanders less than lethal options, particularly in urban warfare and military operations other than war, i.e., peacekeeping, humanitarian assistance and disaster relief, as well as special operations.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N /BA-4 Demonstration and Validation

PROGRAM ELEMENT (PE) NAME AND NO.

0603851M Non-Lethal Warfare Demonstration and Validation

B. PROGRAM CHANGE SUMMARY

	FY2005	FY2006	FY2007
(U) FY 2006 President's Budget:	45.414	43.981	44.613
(U) Adjustments from the President's Budget:			
(U) Congressional/OSD Program Reductions			
(U) Congressional Rescissions			
(U) Congressional Increases		3.600	
(U) POM 06 Core Adjustment			
(U) Reprogrammings	-2.055		
(U) SBIR/STTR Transfer	-0.788		
(U) Minor Affordability Adjustment	-0.035	-0.679	0.202
(U) FY 2007 President's Budget:	42.536	46.902	44.815

CHANGE SUMMARY EXPLANATION:

- (U) Funding: See Above.
- (U) Schedule: Not Applicable.
- (U) Technical: Not Applicable.

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Adv Comp Dev & Prototypes	PROGRAM ELEMENT NUMBER AND NAME 0603851M Non-Lethal Warfare DEM/VAL	PROJECT NUMBER AND NAME C2319 Non-Lethal Weapons Program						
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	42.536	43.302	44.815	45.613	46.261	47.264	48.261	
RDT&E Articles Qty								
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
This project develops non-lethal weapon (NLW) systems that by their design, provide a new non-lethal capability to minimize fatal or permanent injuries and undesired damage to property and the environment. Instead, these systems are designed to stun, incapacitate, or hinder movement of individuals, crowds, or equipment. The availability of NLWs allows commanders less than lethal options, particularly in urban warfare and military operations other than war, i.e., peacekeeping, humanitarian assistance and disaster relief, as well as special operations.								
(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007					
Accomplishment/Effort Subtotal Cost	1.550	2.250	2.500					
RDT&E Articles Qty								
Execution oversight, administration and support of the Joint NLW Program and technologies database.								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007					
Accomplishment/Effort Subtotal Cost	0.645	0.645	0.695					
RDT&E Articles Qty								
Evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various non-lethal (NL) technologies and munitions.								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007					
Accomplishment/Effort Subtotal Cost	1.180	1.388	1.438					
RDT&E Articles Qty								
Modeling and simulation (M&S) of NLWs in warfighter training/wargaming models and performance effects data collection/population to demonstrate/analyze NL effects and optimize training.								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007					
Accomplishment/Effort Subtotal Cost	1.840	2.100	2.268					
RDT&E Articles Qty								
Pursuit of new technology through open competition of industry, academia and government laboratory sources for NL capabilities.								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007					
Accomplishment/Effort Subtotal Cost	1.505	2.160	1.944					
RDT&E Articles Qty								
Airburst Non-Lethal Munition (formerly known as Objective Individual Combat Weapons (OICW)) – Continue development of NL munitions for the “next generation” 25mm combat weapon to exploit air-burst munitions with NL payloads at longer ranges with existing systems.								

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N /BA-4 Adv Comp Dev & Prototypes	0603851M Non-Lethal Warfare DEM/VAL	C2319 Non-Lethal Weapons Program		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		1.149	1.731	2.040
RDT&E Articles Qty				
Program support for each service's coordination and participation in the Joint NLW Program.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		1.600	1.296	0.756
RDT&E Articles Qty				
Mk19 NL Munition - Development of a NL munition for the 40mm Mk19 Grenade Machine Gun.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		4.857	4.945	5.000
RDT&E Articles Qty				
Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) - Jointly sponsored effort that continues the development of a demo asset for evaluation, testing and target assessment of a High Mobility Multipurpose Wheeled Vehicle (HMMWV) mounted directed energy system.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		0.538	0.540	0.000
RDT&E Articles Qty				
Advanced Tactical Laser (ATL) Advanced Concept Technology Demonstration (ACTD) - Jointly sponsored effort to demonstrate technology concepts to satisfy the critical mission needs for an ultra-precision strike capability.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		2.465	0.000	0.000
RDT&E Articles Qty				
Non-Lethal Technology Research, Marine Corps Research University - This Congressional plus-up is intended to assist in the cross-comparison of technology, human effects and long term programatics of several new initiatives and the independent technical assessment of Joint NLWs.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		1.400	0.918	0.380
RDT&E Articles Qty				
Mobility Denial System (MDS) - Joint evaluation, analysis and testing of anti-traction material and delivery methods/volumes.				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		5.117	5.003	6.412
RDT&E Articles Qty				
Studies and Analysis – Medical and NL casualty data research and collection; human effects assessments; acceptability analysis; and technical studies/analysis of emerging technologies for possible NL application.				

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	
		February 2006	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N /BA-4 Adv Comp Dev & Prototypes	0603851M Non-Lethal Warfare DEM/VAL	C2319 Non-Lethal Weapons Program	
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	4.847	6.427	7.833
RDT&E Articles Qty			
The advanced development of emerging technologies into the acquisition process to satisfy critical joint mission tasks.			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	6.803	7.178	8.075
RDT&E Articles Qty			
System development and design of technology development downselected items to proceed into the acquisition cycle to provide NL technology solutions to critical joint mission tasks.			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	1.300	1.458	1.458
RDT&E Articles Qty			
Develop/expand the NATO Measures of Effectiveness (MOE) efforts, chaired by the U.S. to provide input for Defense Capabilities Initiative (DCI) and NATO assessment of NLW in the Defense planning process. Expanded interaction with component commander (COCOM) staffs to identify emerging NLW capabilities and their utility in theater operations and Homeland Security missions.			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	3.225	3.240	3.240
RDT&E Articles Qty			
Pulsed Energy Projectile (PEP) – Explore the development of laser hardware and extensive human effects characterization research and to continue refinement of bio-effects characterization and optimization of lasers as a NL capability.			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	1.195	0.813	0.000
RDT&E Articles Qty			
Tactical Unmanned Ground Vehicle (TUGV) NL Mission Payload Module - Development of NL mission payload modules for integration into the TUGV. This will allow various NL payload modules to be developed and tested for integration on multiple UGVs and allow the user to remotely fire NL payloads.			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost	0.890	0.562	0.000
RDT&E Articles Qty			
Vehicle Lightweight Arresting Device (VLAD) - Accelerated development and acquisition of a man-portable, pre-emplaced spiked net vehicle stopper.			

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N /BA-4 Adv Comp Dev & Prototypes	0603851M Non-Lethal Warfare DEM/VAL	C2319 Non-Lethal Weapons Program		
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007
Accomplishment/Effort Subtotal Cost		0.430	0.648	0.776
RDT&E Articles Qty				
Joint Integration Program (JIP) - Select and test newly developed commercial products that may meet the Joint Services' requirements for specific NL capability set common items.				
(U) Total \$		42.536	43.302	44.815
(U) PROJECT CHANGE SUMMARY:				
		<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>
(U) FY 2006 President's Budget:		45.414	43.981	44.613
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reductions				
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings		-2.055		
(U) SBIR/STTR Transfer		-0.788		
(U) Minor Affordability Adjustment		-0.035	-0.679	0.202
(U) FY 2007 President's Budget:		42.536	43.302	44.815
CHANGE SUMMARY EXPLANATION:				
(U) Funding: See Above.				
(U) Schedule: Not Applicable.				
(U) Technical: Not Applicable.				

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EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N /BA-4 Adv Comp Dev & Prototypes

PROGRAM ELEMENT NUMBER AND NAME

0603851M Non-Lethal Warfare DEM/VAL

PROJECT NUMBER AND NAME

C2319 Non-Lethal Weapons Program

(U) C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
(U) PAN,MC BLI 162800, Non-Lethal Munitions	1.140	1.112	4.030						
(U) PMC BLI 220800, Weapons Enhancement Prog	0.000	5.072	17.051						
(U) PMC BLI 237100, Operations Other Than War	27.453	0.000	0.000						

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

The JNLW Program strategy is to continue to pursue the fielding of NLW systems through modifying Commercial-Off-The-Shelf (COTS) products for near term capabilities and the development of new technology NLW systems in various stages of acquisition. These balanced with efforts in modeling and simulation, experimentation, and state-of-the-art technology investment. The acquisition strategy for each weapon system is largely lead service dependent.

(U) E. MAJOR PERFORMERS:

FY04-FY07 - ARDEC, Picatinny Arsenal, NJ. Development and evaluation of the Airburst Non-lethal Munition program, the Non-Lethal (NL) Mortar program, the Mk19 Grenade Machine Gun NL Munitions program and the Vehicle Lightweight Arresting Device program.

FY04-FY07 - Raytheon Company, Rancho Cucamonga, CA. Working with the Air Force Research Laboratory at Kirtland Air Force Base, NM on the Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) to continue the evaluation, testing and target assessment of a HMMWV mounted directed energy system.

(U) SCHEDULE PROFILE: Not Applicable.

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Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Adv Comp Dev & Prototypes	0603851M Non-Lethal Warfare DEM/VAL	C2319 Non-Lethal Weapons Program
(U) D. SCHEDULE PROFILE:		
<u>Mobility Denial System (MDS)</u>		
Milestone 0:	3rd Qtr, FY 1999	Contract Award: 1st Qtr, FY 2007
Milestone B:	1st Qtr, FY 2003	IOC: 3rd Qtr, FY 2007
DT / OT:	3rd Qtr, FY 2006	FOC: 4th Qtr, FY 2008
Milestone C:	4th Qtr, FY 2006	
<u>Airburst Non-Lethal Munition (ANLM)</u>		
Milestone A:	3rd Qtr, FY2003	Contract Award: 4th Qtr, FY 2008
Milestone B:	3rd Qtr, FY2006	IOC: 2nd Qtr, FY 2009
DT / OT:	1st Qtr, FY 2008	FOC: 4th Qtr, FY 2010
Milestone C:	4th Qtr, FY 2008	
<u>Active Denial System (ADS) ACTD</u>		
ACTD Approved:	3rd Qtr, FY2002	Contract Award: 1st Qtr, FY 2009 (for SD&D)
Milestone B:	1st Qtr, FY 2008	IOC: 4th Qtr, FY 2012
DT / OT:	4th Qtr, FY2010	FOC: 4th Qtr, FY 2014
Milestone C:	2nd Qtr, FY2012	
The development of new technology NLW systems are in various stages of acquisition and the acquisition strategy for each weapon system is largely dependent on lead service.		

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME			
RDT&E, N /BA-4 Demonstration and Validation	0603851M Non-Lethal Warfare Dem/Val			C9999 FY06 Congressional Adds			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011
Project Cost	0.000	3.600	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty							
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:							
COST (\$ in Millions)	FY 2005		FY06		FY07		
Accomplishment/Effort Subtotal Cost	0.000		1.000		0.000		
RDT&E Articles Qty							
Boat Trap System for Port Security/Craft Interdiction 9878N: This Congressional plus-up is intended to advance technology to broaden the boat trap system effectiveness against several threat water-crafts.							
COST (\$ in Millions)	FY 2005		FY06		FY07		
Accomplishment/Effort Subtotal Cost	0.000		2.600		0.000		
RDT&E Articles Qty							
Nat'l Center for /NL Tech Research 2319C: This Congressional plus-up is intended to assist in the cross-comparison of technology, human effects and long term programatics of several new initiatives and the independent technical assessment of Join NLWs.							
(U) Total \$	0.000		3.600		0.000		

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006					
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Demonstration and Validation	0603851M Non-Lethal Warfare Dem/Val				C9999 FY06 Congressional Adds					
(U) PROJECT CHANGE SUMMARY:										
		<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>						
(U) FY 2006 President's Budget:		0.000	0.000	0.000						
(U) Adjustments from the President's Budget:										
(U) Congressional Program Reductions										
(U) Congressional Rescissions										
(U) Congressional Increases										
				3.600						
(U) POM 06 Core Adjustment										
(U) Reprogrammings										
(U) SBIR/STTR Transfer										
(U) Minor Affordability Adjustment										
(U) FY 2007 President's Budget:		0.000	3.600	0.000						
CHANGE SUMMARY EXPLANATION:										
(U) Funding: See above.										
(U) Schedule: Not Applicable.										
(U) Technical: Not Applicable.										
(U) C. OTHER PROGRAM FUNDING SUMMARY:										
	<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Compl</u>	<u>Total Cost</u>
(U) Related RDT&E:										
(U)	RDT&E PE 0603851M, Project C2319, NL Warfare Dem/Val	42.536	43.302	44.815	45.613	46.261	47.264	48.261	Cont	Cont
(U) D. ACQUISITION STRATEGY:										
(U) E. MAJOR PERFORMERS:										

CLASSIFICATION:								
EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2006	
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /				0603857N - Joint Fires Integration and Interoperability Team (JFIIT)				
				BA-4				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		13.289	15.451	0.000	0.000	0.000	0.000	0.000
2691 - Joint Fires Integration and Interoperability Team		13.289	15.451	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles								
<p>In accordance with the FY 05 National Defense Authorization Act, RDT&E funding for Joint Forces Command transfers from Navy to Defense-Wide beginning in FY 07. The new program element for 0603857N is 0604857D under BA 4.</p> <p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: JFIIT conducts assessments and evaluations of combat identification capabilities in order to reduce the risk of fratricide and other friendly fire incidents. These JFIIT events support the U.S. JFCOM mission of joint concept development and experimentation as directed in the Secretary of Defense's (SECDEF's) Defense Planning Guidance. JFIIT events are also an integral part of fulfilling JFCOM's responsibility outlined in the SECDEF's Transformation Planning Guidance (TPG) to measure transformation progress through experimentation and evaluation of findings. Capabilities assessments and evaluations of combat identification during these field evaluations are conducted in the following combat mission areas: surface-to-surface, air-to-surface, surface-to-air, and air-to-air. These mission areas may be evaluated at a single exercise or at several different venues during the year. Venue selection and evaluation of a specific mission area are dependent on force availability within a particular exercise. Evaluation of each specific mission area may require instrumentation of all participants influencing execution of missions within that mission area. Participants, both Blue Forces and Opposing Forces (OPFOR) including aircraft, ships and land based assets to include individual soldiers and Marines may be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real-time data collection and subsequent detailed analysis. This detailed analysis is required to support findings and recommendations that in turn provide solutions to Combatant Commanders' identified combat identification deficiencies. Contractor support is required for instrumentation installation and operation as well as follow-on analysis of the data. A realistic OPFOR will enhance each mission area to generate valid combat identification scenarios and joint fires capabilities assessments. This OPFOR consisting of ground, air and naval forces will be realistic OPFOR equipment whenever practical and can be leased and transported from their home base to the various exercise venues.</p> <p>On 24 February 2005, Joint Combat Identification Evaluation Team (JCIET) name changed to Joint Fires Integration and Interoperability Team (JFIIT).</p> <p>(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION because it includes efforts to evaluate integrated technologies in a realistic operational environment to assess the performance potential of current Tactics, Techniques, and Procedures (TTP), weapons systems, and helps expedite technologies that meet joint warfighters' needs.</p>								

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4		PROJECT NUMBER AND NAME 2691 - Joint Fires Integration and Interoperability Team (JFIIT)	
(U) C. PROGRAM CHANGE SUMMARY:			
(U) Funding:	FY05	FY06	FY07
FY 06 President's Budget	13.475	15.696	16.782
FY 07 President's Budget	13.289	15.451	0.000
Total Adjustments	-0.186	-0.245	-16.782
Summary of Adjustments			
SBIR	-0.179		
Department of Energy Transfer	-0.010		
Nuclear Physical Security	0.003		
SEC. 8026(F) Federally Funded R&D Centers	0.000	-0.010	
SEC. 8125 Revised Economic Assumptions	0.000	-0.071	
Congressional Action 1% Reduction	0.000	-0.164	
Congressionally Directed Transfer of JFCOM to Defense-Wide			-16.782
Subtotal	-0.186	-0.245	-16.782
(U) Schedule: Not Applicable			
(U) Technical: Not Applicable			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4																	
<p>(U) D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Line Item No. & Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2005</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2006</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2007</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2011</u></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Not Applicable</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) E. ACQUISITION STRATEGY:</p> <p>FY 2005-06. Five-year sole-source (one-year basic with four one-year options) contracts were awarded to SAIC and BAE SYSTEMS on 1 April 2002 (MEVATEC was bought by BAE in April 03, resulting in name change only) to support JFIIT (formerly named JCIET). The first year option was awarded on 1 April 2003 for both contracts. Second year option commenced November 2004. A two-year sole-source contract was awarded on 16 May 03, to Applied Data Trends, Inc. (ADTi), to provide computer-generated graphic display (Tactical Office software) support. A contract was awarded to Airborne Tactical Advantage Company (ATAC), on 12 May 03, to provide four foreign fighter-type aircraft to support JFIIT (formerly named JCIET) August 2003 event at Gulfport, MS. Efforts are underway to compete a new contract requirement for JFIIT (formerly named JCIET) to be awarded during FY 2006 (one year basic with four one-year options). JFIIT will continue to utilize competitive and sole-source contract procedures, to include reviewing Government agencies, to determine the best vendor to meet JFIIT requirements, at the best value.</p> <p>(U) F. MAJOR PERFORMERS:</p> <p>NONE</p> <p>(U) G. PERFORMANCE METRICS:</p>		<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	Not Applicable							
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>										
Not Applicable																	

CLASSIFICATION:				
EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603857N - Joint Fires Integration and Interoperability Team (JFIIT)	2691 - Joint Fires Integration and Interoperability Team (JFIIT)		
(U) B. Accomplishments/Planned Program				
Field Evaluations	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	2.889	4.660	0.000	
RDT&E Articles Quantity				
<p>JFIIT conducts assessments and evaluations of combat identification capabilities in order to reduce the risk of fratricide and other friendly fire incidents. Capabilities assessments and evaluations of combat identification during these field evaluations are conducted in accordance with and in support of the Defense Planning Guidance and Transformation Planning Guidance. Evaluations are conducted in the following combat mission areas: surface-to-surface, air-to-surface, surface-to-air, and air-to-air. These mission areas may be evaluated at a single exercise or at several different venues during the year. Venue selection and evaluation of a specific mission area are dependent on force availability within a particular exercise. Evaluation of each specific mission area may require full instrumentation of all participants influencing execution of missions within that mission area. All participants, both Blue Forces and Opposing Forces (OPFOR) including aircraft, ships and land based assets to include individual soldiers and Marines may be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real-time data collection and subsequent detailed analysis. This detailed analysis is required to support findings and recommendations that in turn provide solutions to Combatant Commander's identified combat identification deficiencies. Contractor support is required for instrumentation installation and operation as well as follow-on analysis of the data. A realistic OPFOR is requested within each mission area as per direction outlined in Director, Force Transformation directive to generate valid joint fires and combat identification scenarios. This OPFOR consisting of ground, air and naval forces will be realistic OPFOR equipment whenever practical and can be leased and transported from their home base to the various exercise venues.</p> <p>FY 2005 Accomplishments: In 2005, JFCOM expanded JFIIT's charter to incorporate evaluation requirements across the spectrum of Joint Fires. JFIIT has accomplished numerous Joint Fires evaluations and related analysis events as well as support for other Joint Fires activities. JFIIT supported the analysis of Joint Fires in conjunction with the Joint National Training Capability Integrated Training Event at Joint Red Flag 05. JFIIT collected and analyzed data and provided real-time and post mission training feedback to exercise participants. JFIIT also conducted a Reference Point Method Quick-Look Operational Study of laser range pointer inaccuracies and fielded a safety message and corrective actions to the Services. In addition, JFIIT was also tasked to support the CCID ACTD 2005 experiment conducted in September 2005 at Salisbury Plains in the United Kingdom.</p> <p>FY 2006 Plan: JFIIT will conduct Joint Fires and combat identification and interoperability evaluations in conjunction with JFCOM test and evaluation events in the areas of surface-to-surface, air-to-surface, surface-to-air, and air-to-air. Many JFIIT operations will require full instrumentation of all blue force and opposing force participants. All platforms including aircraft, ships at sea, and land based assets will be fully instrumented. JFIIT evaluations will require full instrumentation of ground maneuver mounted and dismounted elements, airborne platforms, ships at sea and an opposing force (OPFOR) air and ground force. Instrumentation provides time, space, position information and shot pairing for real time casualty assessment and kill removal and for post-mission and post-evaluation analysis. The data collected from the instrumentation will point to solutions to combat ID deficiencies. In accordance with OSD Director of Force Transformation policy guidance, a realistic OPFOR is employed in support of the exercise. JFIIT is also directed by charter to provide support to promising Combat Identification enhancements or joint fires initiatives.</p>				
JFIIT Support	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	1.487	1.532	0.000	
RDT&E Articles Quantity				
<p>FY 2005 Accomplishments: A tenant at Eglin AFB, JFIIT received base support to include: utilities, cleaning, communications, printing, shipping and vehicles. JFIIT maintained and upgraded analytical capabilities with software and hardware improvements. The following major documents were published in preparation for and as a result of Field Evaluations: Evaluation Plan, Spin-Up Plan, BLUFOR and OPFOR Playbooks, National Technical Means Assessment, Redeployment Plan, Quick Look Report, and the Final Report. Briefings on findings and recommendations were prepared and made available for presentation to the Joint Staff, the Services and the Combatant Commanders. JFIIT contracted for Technical and Acquisition Management Support through a Host Base contract vehicle.</p> <p>FY 2006 Plan: Continuing base support will be required.</p>				

R-1 SHOPPING LIST - Item No. 76

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603857N - Joint Fires Integration and Interoperability Team (JFIIT)	PROJECT NUMBER AND NAME 2691 - Joint Fires Integration and Interoperability Team (JFIIT)		
(U) B. Accomplishments/Planned Program				
Annual Support Contracts	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	8.507	8.847	0.000	
RDT&E Articles Quantity				
<p>FY 2005 Accomplishments: JFIIT technical and support manpower for planning, execution, analysis and reporting for combat identification capabilities assessment, findings and recommendations were provided through three Advisory and Assistance Support contracts. JFIIT events were developed to mirror real world joint combat operations. JFIIT analyzed participant command and control systems, tactical displays, voice and data link communications, identification systems and engagement decisions to determine causes of fratricide and assist in developing findings and recommended solutions. Overall combat effectiveness to include target engagements, lost shot opportunities and missed targets were also evaluated and analyzed. A white force (evaluation control) network was designed and constructed for real-time mission monitoring of evaluation execution. A classified network was also designed and constructed to support participants at different geographical locations in the conduct and debrief of the daily missions at the SECRET level to allow participants the opportunity to discover, learn, and adjust Tactics, Techniques and Procedures (TTP) and systems performance for the subsequent mission.</p> <p>FY 2006 Plan: JFIIT will continue to depend on advisory and support contract manpower for the planning, execution, analysis and reporting for combat identification capabilities assessments, findings and recommendations to assist in developing solutions to prevent future fratricide during real world joint combat operations. The avenues for such may consist of National Training Center, Weapons Tactics Instruction, Joint Readiness Training Center and various other events.</p>				
Travel and Conferences	FY 05	FY 06	FY07	
Accomplishments/Effort/Subtotal Cost	0.406	0.412	0.000	
RDT&E Articles Quantity				
<p>FY 2005 Accomplishments: JFIIT hosted and attended numerous planning conferences to include Airspace, OPFOR, Initial Planning, Mid-Planning and Final Planning. Warfighter participants were an integral part of the planning process including scenario development and preparation for interoperability between the services. Site visits were required to prepare for events and were conducted as necessary. The JFIIT staff also provided technical and operational support to forums dealing with combat ID and friendly fire issues.</p> <p>FY 2006 Plan: JFIIT will host and attend numerous planning conferences and site visits in preparation for National Training Center, Weapons Tactics Instruction, Joint Readiness Training Center and various other events. Additionally, JFIIT will provide Subject Matter Experts to various forums.</p>				

R-1 SHOPPING LIST - Item No. 76

CLASSIFICATION:												
Exhibit R-3 Cost Analysis (page 1)									DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603857N - Joint Fires Integration and Interoperability Team (JFIIT)			PROJECT NUMBER AND NAME 2691 - Joint Fires Integration and Interoperability Team (JFIIT)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	0.000
Ancillary Hardware Development											0.000	0.000
Systems Engineering											0.000	0.000
Licenses											0.000	0.000
Tooling											0.000	0.000
GFE											0.000	0.000
Award Fees											0.000	0.000
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
Development Support											0.000	0.000
Software Development											0.000	0.000
Training Development											0.000	0.000
Integrated Logistics Support											0.000	0.000
Configuration Management											0.000	0.000
Technical Data											0.000	0.000
GFE											0.000	0.000
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												

CLASSIFICATION:												
Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N / BA-4			0603857N - Joint Fires Integration and Interoperability Team (JFIIT)				2691 - Joint Fires Integration and Interoperability Team (JFIIT)					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Evaluation Other Costs	MIPR	Various	17.052	2.002	07/05	3.631	03/06					
Operations Costs/Research	MIPR	JFIIT/Various	6.014	1.487	07/05	1.660	03/06					
Developmental Test and Evaluation	MIPR	Various	4.650	0.530	08/05	0.538	04/06					
Travel and Conferences	MIPR	JFIIT/Various	2.835	0.406	09/05	0.412	05/06					
Operational Test and Evaluation	SS/T&M	SAIC, BAE, CNA / Eglin AFB	36.494	8.507	11/04	8.847	06/06					
Operational Test and Evaluation	CPAF	TAMS / Eglin AFB	0.695	0.357	10/04	0.363	06/06					
Subtotal T&E			67.740	13.289		15.451						
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Subtotal Management			0.000	0.000		0.000						
Remarks:												
Total Cost			67.740	13.289		15.451						
Remarks:												

CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																								DATE:				
																								February 2006				
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME								PROJECT NUMBER AND NAME								
RDT&E, N / BA-4												0603857N - Joint Fires Integration and Interoperability Team (JFIIT)								2691 - Joint Fires Integration and Interoperability Team (JFIIT)								
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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																												
System Development (e.g., Radar System dev.)																												
Equipment Delivery (e.g., EDM Radar Delivery)																												
Software 1XXSW Delivery 2XXSW Delivery																												
Test & Evaluation Milestones																												
Operational Test																												
Planning																												
Publications																												
Production Milestones																												
LRIP I																												
LRIP II																												
FRP																												
Deliveries																												

R-1 SHOPPING LIST - Item No. 76

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&BA-4	0603857N - Joint Fires Integration and Interoperability Team (JFIIT)				2691 - Joint Fires Integration and Interoperability Team (JFIIT)			
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
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)	2Q-3Q&4Q	1Q-4Q						
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 Initial Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 76

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /					BA 4		R-1 ITEM NOMENCLATURE 0603860N, JPALS
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	32.652	38.670	41.242	37.653	50.867	31.306	11.966
2329 JOINT PRECISION APPROACH	32.652	38.670	41.242	37.653	50.867	31.306	11.966

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

This program element provides for the development, integration, and testing of the Joint Precision Approach and Landing System (JPALS), which will be applicable to DoD Ground systems, DoD aircraft, and Navy and Coast Guard surface ships. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night precision approach and landing capability. Operating environments include fixed or permanent ground facilities, tactical facilities, shipboard, and special operations. Civil interoperability is envisioned. The JPALS program was established in response to the Joint Mission Need Statement (MNS) for Precision Approach and Landing Capability (PALC), which was approved by the Chief of Naval Operations on 28 July 94 and the Chief of Staff of the Air Force on 8 August 94. The PALC MNS was validated by the Joint Requirements Oversight Council on 29 August 95. Army Joint Service participation was included in the 28 May 96 Principal Deputy Under Secretary of Defense (Acquisition and Technology) Milestone 0 Acquisition Decision Memorandum (ADM), which also designated the Air Force as the Lead Service. In March 2004, the JPALS Overarching Integrated Program Team determined that the MNS should be converted to an Initial Capabilities Document (ICD). The JPALS ICD was approved by the JROC on 19 September 05. The Capability Development Document (CDD) and Analysis of Alternatives (AoA) update are in process and approval is planned in June 2006. Joint Capability Integration Development System (JCIDS) documentation staffing and approval requirements, and the need for additional technology maturation prior to awarding the SDD contract have resulted in the proposal to delay Milestone B until FY-07.

The funds cited above will support completion of the JPALS Technology Development phase by 3Q FY-07, will support Milestone B preparation requirements, will fund the System Development and Demonstration (SDD) contracts source selection efforts, and will initiate SDD phase efforts beginning in FY 2007. Funding supports the JPALS Tier 1 acquisition, which includes development of the Sea Based JPALS system, reference avionics, and the initial integration aboard CV and LH class ships.

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /		BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603860N, JPALS			PROJECT NUMBER AND NAME 2329, JOINT PRECISION APPROACH	
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
W2329 JOINT PRECISION APPROACH		32.652	38.670	41.242	37.653	50.867	31.306	11.966
RDT&E Articles Qty							5	4

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

This program element provides for the development, integration, and testing of the Joint Precision Approach and Landing System (JPALS), which will be applicable to DoD Ground systems, DoD aircraft, and Navy and Coast Guard surface ships. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night precision approach and landing capability. Operating environments include fixed or permanent ground facilities, tactical facilities, shipboard, and special operations. Civil interoperability is envisioned.

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Several JPALS Land and Ship based EDM test articles will be procured and delivered in FY-10 and FY-11 to support system development and demonstration.

A total of nine ship system EDMs will be procured for SDD: two will be used at the contractor facility, three will be delivered to NAS Patuxent River LSTF (including 1 for the facility, 1 for the mobile test van, and 1 spare), and four will be installed and deployed on ships. Two of the ship system EDMs will be installed on CVNs and two will be installed on LHAs to support integrated test at sea. Test platforms are tentatively identified as USS CARL VINSON (CVN 70), USS RONALD REAGAN (CVN 76), USS NASSAU (LHA 4), and USS PELELIU (LHA 5) based on current ship availability plans. Two land based EDMs (one fixed system and one mobile system) will be delivered to NAS Patuxent River LSTF for SDD. Each EDM is anticipated to consist of GPS sensors (receiver, anti-jam antenna, and antenna electronics), an inertial navigation system, a control and display subsystem, an uninterruptible power supply, and equipment racks & cabling.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603860N, JPALS	PROJECT NUMBER AND NAME 2329, JOINT PRECISION APPROACH																
B. ACCOMPLISHMENTS / PLANNED PROGRAM:																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Technology Development Phase</td> <td style="width: 10%;">FY 2005</td> <td style="width: 10%;">FY 2006</td> <td style="width: 10%;">FY 2007</td> <td style="width: 10%;"></td> </tr> <tr> <td>Accomplishments/Effort/Sub-total cost</td> <td style="text-align: center;">32.652</td> <td style="text-align: center;">38.670</td> <td style="text-align: center;">21.990</td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					Technology Development Phase	FY 2005	FY 2006	FY 2007		Accomplishments/Effort/Sub-total cost	32.652	38.670	21.990		RDT&E Articles Qty				
Technology Development Phase	FY 2005	FY 2006	FY 2007																
Accomplishments/Effort/Sub-total cost	32.652	38.670	21.990																
RDT&E Articles Qty																			
<p>Complete technology maturation and risk reduction tasks in support of Technology Development (TD) phase. Tasks include hardware and software development for critical technologies (including precision Global Positioning Satellite (GPS)/Inertial Navigation System (INS), anti-jam antenna electronics, Low Probability of Intercept data link hardware subsystems, and critical software components to include relative navigation integrity, guidance and control, system monitoring and communications functions). Prepare documentation to support Milestone-B. Develop an SDD contract solicitation package for release to industry. Complete TD phase tasking (assessment of technology maturation, evaluation of data link requirements and assessment of JPALS incorporation into Embedded GPS/INS).</p>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">System Development & Demonstration Phase</td> <td style="width: 10%;">FY 2005</td> <td style="width: 10%;">FY 2006</td> <td style="width: 10%;">FY 2007</td> <td style="width: 10%;"></td> </tr> <tr> <td>Accomplishments/Effort/Sub-total Cost</td> <td></td> <td></td> <td style="text-align: center;">19.252</td> <td></td> </tr> <tr> <td>RDT&E Articles Qty</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					System Development & Demonstration Phase	FY 2005	FY 2006	FY 2007		Accomplishments/Effort/Sub-total Cost			19.252		RDT&E Articles Qty				
System Development & Demonstration Phase	FY 2005	FY 2006	FY 2007																
Accomplishments/Effort/Sub-total Cost			19.252																
RDT&E Articles Qty																			
<p>Award SDD contract(s) in 3rd quarter FY07. Commence preparations for Systems Functional Review (SRR) and Systems Requirements Review (SFR).</p>																			

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603860N, JPALS
		PROJECT NUMBER AND NAME 2329, JOINT PRECISION APPROACH

C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
FY06 President's Budget:	32.077	39.260	44.341
FY07 President's Budget:	32.652	38.670	41.242
Total Adjustments	0.575	-0.590	-3.099
Summary of Adjustments			
Other general provisions		-0.590	
Programmatic adjustments			-3.273
SBIR	-0.587		
BTR	1.187		
Miscellaneous Adjustments	-0.025		0.174
Subtotal	0.575	-0.590	-3.099

Schedule:
Milestone B was adjusted from FY06 to 3Q FY07 in order to complete JCIDS process, and to continue maturation of key JPALS technologies. This schedule will allow the program to transition to the System Development and Demonstration (SDD) phase with more mature technologies to reduce risk during the SDD phase.

Technical: Not applicable.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603860N, JPALS	PROJECT NUMBER AND NAME 2329, JOINT PRECISION APPROACH
D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable			
<p>E. ACQUISITION STRATEGY:</p> <p>TD phase development is being conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic systems Command (Global Air) and ARINC Engineering Services, California, MD. This effort will provide the concept of operations, performance specifications and integration guides, which will furnish the foundation from which to launch the SDD phase development. Prior to the SDD phase, overall joint program leadership will transition from the USAF to the USN. SDD phase development will consist of seabased JPALS, related ship and airborne reference systems, end-to-end software algorithms, necessary ship installation hardware, test equipment, system simulation software, and other RDT&E products and tasks. The SDD contract will be decided by a full and open competition. Future procurement of airborne systems will consist of modifications to Original Equipment Manufacture (OEM) aircraft integration and to existing avionics. Seabased JPALS will be developed by the Navy with government owned or non-proprietary algorithms to an open system architecture in order to facilitate the compatible integration of many different aircraft and avionics architectures. Landbased JPALS units will be developed by the Air Force to meet the requirements of all the services.</p>			

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT	PROJECT NUMBER AND NAME									
RDT&E, N /		0603860N, JPALS	2329, JOINT PRECISION APPROACH									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Technology Development and Demo	C-CPFF	ARINC ENGINEERING SERVICES, LLC, ANN	16.896	18.000	12/04	15.300	11/05	2.000			42.896	42.896
Systems Engineering - Risk Management/technology maturation studies	C-CPFF	ARINC ENGINEERING SERVICES		2.000	12/04	2.000					2.000	2.000
Systems Engineering	WR	NAWCAD, Pax River, MD	15.542	4.100	12/04						19.642	
Systems Engineering-	C-CPFF	Eagan Mcallister/Lexington Park, MD	2.714	2.230	02/05						4.944	4.944
Systems Engineering - SRGPS H/W Prototyping	C-CPFF	Titan/Lexington Park, MD	2.520	1.655	02/05						4.175	4.175
Systems Engineering - SRGPS Studies and Analyses		Various	3.966	.499	12/04						4.465	
Systems Engineering - SRGPS H/W Development	C-CPFF	Honeywell/Clearwater, FL	1.194	1.515	01/05						2.709	2.709
Curriculum Development - TD Phase	C/T&M	IDSi, Indian Head, MD	.070	.035	02/05						.105	.105
Studies and Analyses - TD Phase	C/IDIQ	IRM Ltd, Lexington Park, MD	.060								.060	.060
Integration and Fielding Support	WR	NAWCAD, Pax River, MD				2.910	01/06	2.590	12/06	Continuing	Continuing	
SDD Contract	C/CR	TBD						19.252	12/06	Continuing	Continuing	
SUBTOTAL PRODUCT DEVELOPMENT			42.962	30.034		20.210		23.842		Continuing	Continuing	
Remarks: Continue systems engineering process, prepare for and conduct an integrated baseline review, and establish joint government/contractor risk management process. Conduct system requirements review and preliminary design review. Begin preparations for the system critical design review. Continue non-recurring engineering efforts under the SDD contract, including requirements identification and decomposition.												
SUPPORT												
Engineering Support Services	C/CR	Titan/ Lexington Park, MD				2.650	01/06	3.000	12/06	Continuing	Continuing	
Test Support Services/Ship Integration	C/CR	Eagan Mcallister/ Lexington Park MD				1.200	01/06	.500	12/06	Continuing	Continuing	
Test Support Services/TEMP	C/CR	TBD				.950	01/06	1.000	12/06	Continuing	Continuing	
R&M Support	C/CR	Mantech/Lexington Park, MD				.200	01/06	.200	12/06	Continuing	Continuing	
Logistics Support	C/CPFF	Wylie Labs/Lexington Park, MD		.386	06/05	.400	01/06	.400	12/06	Continuing	Continuing	
Requirements Analysis	C/CR	Holmes-Tucker/Hampton, VA				.200	01/06	.200	12/06	Continuing	Continuing	
EGI Technology Maturation	SS	Honeywell/Clearwater, FL				.500	01/06	2.500			3.000	3.000
Engineering Studies/Analysis	SS/COST	Stanford University, CA		.480	06/05	0.200	11/05				.680	.680
Integrated Logistics Support - TD Phase	WR	NAWCAD, Pax River, MD	.594	.500	12/04						1.094	
Program Office support-TD Phase	WR	NAWCAD, Pax River, MD	.613								.613	
Logistics Management Support	WR	NAWCAD, Pax River, MD	.156			.700	01/06	.700	12/06	Continuing	Continuing	
SUBTOTAL SUPPORT			1.363	1.366		7.000		8.500		Continuing	Continuing	
Remarks: Tasking supports completion of Technology Development phase activities. Support includes development of Milestone-B documentation, completion of TD phase test ad demonstration efforts and systems engineering support.												

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE:

February 2006

APPROPRIATION/BUDGET ACTIVITY

PROGRAM ELEMENT NUMBER AND NAME

PROJECT NUMBER AND NAME

RDT&E, N / BA-4

0603860N, Joint Precision Approach and Landing System

2329, Joint Precision Approach and Landing System

Fiscal Year	2005			2006				2007				2008				2009				2010				2011							
	1	2	3	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																															
JPALS System Development	JPALS TECHNOLOGY DEVELOPMENT												JPALS SYSTEM DEVELOPMENT AND DEMONSTRATION																		
Contract Award/Event																															
Test & Evaluation Milestones																															
Test Article Delivery																															
Demonstration/Integration																															
Developmental Test																															
Operational Test																															

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	19.617	36.170	50.282	25.959	0.505	0.436	0.278
Project 3031/Single Int. Air Picture (SIAP)	19.617	36.170	50.282	25.959	0.505	0.436	0.278

A. (U) Mission Description and Budget Item Justification

Single Integrated Air Picture (SIAP) is the product of fused, near-real-time and real-time data from multiple sensors to allow development of common, continuous, and unambiguous tracks of all airborne objects in the surveillance area. All airborne objects must be detected, tracked, and reported. Each object must have one and only one track identifier and associated characteristics to be incorporated into SIAP. Current systems do not provide this capability. The Joint SIAP System Engineering Organization (JSSEO), approved by the Joint Requirements Oversight Council (JROC) in March 2000, was chartered in Oct 2000 by the Under Secretary of Defense (A&T) to perform "the system engineering needed to fix problems in the existing Joint Data Network (JDN) and to guide development toward a future SIAP capability."

This Joint engineering organization will develop tools/processes and perform system engineering that will identify cost effective fixes to US/coalition tactical data link systems. The resulting fixes will be addressed in incremental blocks designed to improve the SIAP. Each block will identify specific changes to be implemented in tactical systems to improve integrated air and missile defense/theater air warfare capabilities.

* Block 0 addressed four joint warfighting shortfalls selected for their impact on the Joint Data Network (JDN), their applicability across the Services, and the engineering maturity reflected by interface change proposals already on-record. The Block 0 issues addressed were a common correlation/decorrelation, formation tracking/correlation, identification taxonomy and symbology, and an identification (ID) conflict resolution matrix.

* Block 1 is addressing a set of JDN deficiencies approved by United States Joint Forces Command to provide warfighter benefits which can be implemented in the near-to mid-term. The issues being addressed are a further reduction of dual tracks, improved combat ID capability, improved data sharing (network capacity), and improved air picture for theater ballistic missile defense performance. Improvements addressing these issues will be implemented via integration of the Integrated Architecture Behavior Model (IABM) into the various Combat Systems being used or being developed by the Services including the Navy. Block 1 will also address Peer-to-Peer network and network Quality of Service issues.

This PE provides the resources for the Navy system engineering support to the Joint effort to develop SIAP capability and system engineering support to Navy Pathfinder Programs of Record (E-2, Aegis, SSDS) for integration of the Joint solution.

R-1 SHOPPING LIST - Item No 78

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT. AIR PICTURE (SIAP) SYS ENG			PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	19.617	36.170	50.282	25.959	0.505	0.436	0.278
RDT&E Articles Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

At the direction of the Office of the Secretary of Defense and working in conjunction with the Joint SIAP System Engineering Organization (JSSEO), the Navy mission is to support the design, development and testing of a SIAP capability which satisfies requirements mandated by the Global Information Grid (GIG), Theater Air and Missile Defense (TAMD) and Combat Identification (CID) Capstone Requirements Documents (CRD). The SIAP capability will provide the Navy warfighter with the ability to better understand the battlespace and employ weapons to the full extent of their designed capabilities. The SIAP will support the spectrum of offensive and defensive operations by US, allied, and coalition partners in the airspace within a theater of operations (e.g., attack operations, suppression of enemy air defenses, air and missile defense, intelligence preparation of the battlefield). The SIAP is accomplished through a combination of materiel and nonmateriel improvements. This effort through the application of disciplined System Engineering processes, policies, products and services will enable the delivery of an integrated, interoperable, reliable, and maintainable Joint SIAP capability in Navy warfare systems/platforms, in support of Joint and Navy Mission Capabilities.

SIAP capability is being introduced through a series of improvements called Configurations (Capability Drops), targeted at eliminating specific interoperability issues, providing C4I enhancements, and delivering an executable integrated architecture. The engineering specifications and requirements developed by each configuration system engineering effort will be incorporated into the successive versions of the Joint IABM developed within a two year spiral capability improvement process. The delivered IABM will be used to develop the successive versions of the platform specific applications to be implemented in the Navy combat systems which will provide the Joint SIAP capability. The IABM will also be used as a standard against which to assess performance of the Navy combat systems in terms of Joint Force interoperability. The Navy is investing in the Open Architecture construct for many reasons, one of which is to create the combat system computing architecture which will permit the most rapid and least expensive implementation of the IABM and other Joint applications. To that end, this effort is also providing some resources to the Open Architecture system engineering process.

Implementation of a platform specific application in the Navy Pathfinder combat systems (E-2, Aegis, and SSDS), will reduce the risk of fratricide to US/coalition forces caused by incorrect correlation and ID association and enable our combatant commanders to exploit the full kinematic range of our weapons through better Joint Force integration.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)

B. Accomplishments/Planned Program (Cont.)

	FY05	FY06	FY07
Navy Block Upgrade Implementation	19.617	36.170	50.282

(U)FY2005 ACCOMPLISHMENTS:

The FY05 Block 1 effort was focused on completion of the reference algorithms for use in the IABM. Other FY05 efforts included completing alignment of the SIAP Integrated Architecture and Navy Open Architecture functional allocations. The host combat systems (Aegis, SSDS, E-2) continued migration efforts towards an open architecture computing environment to enable integration of the Joint IABM functionality. Navy Stakeholders continued required system engineering efforts including identification and correction of integration issues, and testing of the IABM software and functionality in a simulation/stimulation environment. Configuration 05 was delivered as an engineering prototype. Risk mitigations were conducted. Continued Block 0 efforts focused on completing implementation of the Common Correlation Algorithm in ACDS Block 0.

(U) FY2006 PLAN:

The FY06 Block 1 System Engineering effort is focused on completion of the IABM required to support Configuration 2007 (Capability Drop 1) delivery at the end of FY07. In addition, the Pathfinder Combat Systems (Aegis, SSDS, E-2) will continue to migrate to an open architecture computing environment in accordance with the Navy Open Architecture Roadmap. This will enable integration of the Joint IABM functionality. In support of integration, prototype adaptation layers and associated interface design specifications for the IABM will be developed this year. Engineering Assessments and developmental testing of the IABM software to validate and verify functionality in a simulation/stimulation environment will be conducted throughout the year. During the last quarter of this year, the Navy will conduct an at sea demonstration of a reference implementation of the IABM using the Common Network Interface as a host. Block 0 efforts are focused on integration of Interface Change Proposal TJ00-004 (ID Taxonomy) in the F/A-18 mission computer, verifying integration of ICP TM98-035 (Common Correlation Algorithm) in the E-2 mission computer, and supporting migration to open architecture in the Aegis and SSDS combat systems.

(U) FY2007 PLAN:

The FY07 System Engineering effort will be focused on completion of the adaptation layers and associated interface design specifications for the IABM which will support Capability Drop 1. These efforts include validation of the functionality to be delivered and review of the engineering artifacts which support development of the IABM based host specific applications for implementation. The Navy will continue engineering risk reduction efforts in support of IABM integration. The purpose of these system engineering efforts is to ultimately enable seamless integration of the IABM into host Navy Combat Systems. In addition, system engineering will continue in support of the joint spiral development of the IABM Configuration 2009 to be delivered in support of Capability Drop 2. Block 0 efforts will complete this year with the validation of the integration of Interface Change Proposal TJ00-004 (ID Taxonomy) in the F/A-18 mission computer and migration to open architecture in the Aegis and SSDS combat systems.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY2005	FY2006	FY2007
FY06 President's Budget	19.957	36.721	50.837
FY 07 President's Budget	19.617	36.170	50.282
Total Adjustments	<u>-0.340</u>	<u>-0.551</u>	<u>-0.555</u>
Summary of Adjustments			
General provisions	-0.011	-0.551	0.000
Programmatic changes	0.000	0.000	-0.555
SBIR	<u>-0.329</u>	<u>0.000</u>	<u>0.000</u>
Subtotal	<u>-0.340</u>	<u>-0.551</u>	<u>-0.555</u>
Schedule: See Attached R4.			
Technical: Not Applicable			

R-1 SHOPPING LIST - Item No. 78

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)
<p>D. OTHER PROGRAM FUNDING SUMMARY: Block 1</p> <p><u>Line Item No. & Name</u> Related RDT&E: Computer programs developed under these programs are tested in their integrated configuration.</p> <p>PE 0605853N 3039 (CHENG) PE 0205604N 2126 (CDLMS) PE 0603582N 0164(DEP) PE 0604307N 1447 (AEGIS) PE 0604755N 2178 (SSDS) PE 0604518N 1604 (ACDS) PE 0603658N 2039 (CEC) PE 0204136N 1662 (F/A 18) PE 0204152N 0463 (E2C)</p> <p>E. Acquisition Strategy: Not Applicable</p> <p>F. MAJOR PERFORMERS:</p> <p>Naval Surface Warfare Center, Dahlgren VA - Surface Combatant System Engineering and Computer Integration Naval Air Warfare Center Aircraft Division, Patuxent River MD - Aircraft Platform Integration and System Engineering Space and Warfare Systems Command, San Diego CA - System Communication</p>		

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Exhibit R-3 Cost Analysis (page 1)

DATE: FEBRUARY 2006

APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-4			0603879N			3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE								
Cost Categories (Tailor to WBS, or System/Item Req't)	Contract Method & Type	Performing Activity & Location	Total *PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Block 0 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	0.879	0.000	VAR	0.000	VAR	0.000	VAR			0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	1.129	0.000		0.000		0.000				0.000	0.000	
	MIPR	Air Force ESC, Boston MA	1.329	0.000		0.000		0.000				0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.621	0.000		0.000		0.000				0.000	0.000	
	VAR	Contract Supt, Various	5.155	0.000		0.000		0.000				0.000	0.000	
Subtotal Block 0			10.308	0.000		0.000		0.000						
Block 1 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	15.340	0.000	VAR	0.000	VAR	0.000	VAR			0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	16.085	0.000		0.000		0.000				0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	17.114	0.000		0.000		0.000				0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	7.045	0.000		0.000		0.000				0.000	0.000	
	VAR	Contract Supt, Various	20.699	0.000		0.000		0.000				0.000	0.000	
Subtotal Block 1			76.282	0.000		0.000		0.000						
Block 2 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	2.060	0.000	VAR	0.000	VAR	0.000	VAR			0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	2.266	0.000		0.000		0.000				0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	2.369	0.000		0.000		0.000				0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	1.030	0.000		0.000		0.000				0.000	0.000	
	VAR	Contract Supt, Various	2.271	0.000		0.000		0.000				0.000	0.000	
Subtotal Block 2			9.996	0.000		0.000		0.000						
Architecture (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	1.536	0.000	VAR	0.000	VAR	0.000	VAR			0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	1.625	0.000		0.000		0.000				0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	1.684	0.000		0.000		0.000				0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.786	0.000		0.000		0.000				0.000	0.000	
	VAR	Contract Supt, Various	2.364	0.000		0.000		0.000				0.000	0.000	
Subtotal Architecture			7.995	0.000		0.000		0.000						
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0.988	0.000	VAR	0.000	VAR	0.000	VAR			0.000	0.000	
Tools & Analysis	MIPR	Navy PEO/TSC, Arlington VA	0.876	0.000		0.000		0.000				0.000	0.000	
(JSSEO)	MIPR	AF ESC/DI, Boston MA	1.206	0.000		0.000		0.000				0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.520	0.000		0.000		0.000				0.000	0.000	
	VAR	Contract Supt, Various	1.191	0.000		0.000		0.000				0.000	0.000	
Subtotal SE Tools & Analysis			4.781	0.000		0.000		0.000				0.000		
Validation and Certification	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren VA	7.000	0.000		0.000		0.000						
BLOCK 0 (NAVY)					VAR		VAR		VAR					CONT
	VAR	NAVSEA, Washington DC	1.174	0.000		0.000		0.000				CONT	CONT	
	VAR	PEO IWS, Washington, DC	4.476	1.400		1.600		1.200				CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD	4.757	0.000		0.000		0.000				CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA	3.428	0.000		0.000		0.000				CONT	CONT	
	PD	CHENG, Washington, DC	0.500	0.000		0.000		0.000				CONT	CONT	
Subtotal BLOCK 0			14.335	1.400		1.600		1.200				CONT	CONT	
BLOCK 1 (NAVY)					VAR		VAR		VAR					CONT
	VAR	NAVSEA, Washington DC	0.000	3.450		11.658		1.691				CONT	CONT	
	VAR	PEO IWS, Washington, DC	0.000	7.082		10.094		28.682				CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD	0.000	4.493		9.188		12.939				CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA	0.000	3.192		3.630		5.770				CONT	CONT	
	PD	CHENG, Washington, DC	0.000	0.000		0.000		0.000				CONT	CONT	
Subtotal BLOCK 1			0.000	18.217		34.570		49.082				CONT	CONT	
SUBTOTAL			130.697	19.617		36.170		50.282		0.000		CONT	CONT	
Remarks:														

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(Exhibit R-3, page 6 of 9)

Exhibit R-2, RD TEN Budget Item Justification

(Exhibit R-2, page 6 of 9)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NAME AND NUMBER									
RDT&E, N/BA-4			0603879N		3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE									
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Operational Test & Evaluation														
Tooling														
GFE														
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			0.975											
Travel			0.180											
Labor (Research Personnel)														
Rent/Const/Utilities/Computers														
Subtotal Management (JSSEO)			1.155	0.000		0.000		0.000			0.000	CONT	CONT	
Remarks:														
Total Cost			131.852	19.617		36.170		50.282			0.000	CONT	CONT	
Remarks:														

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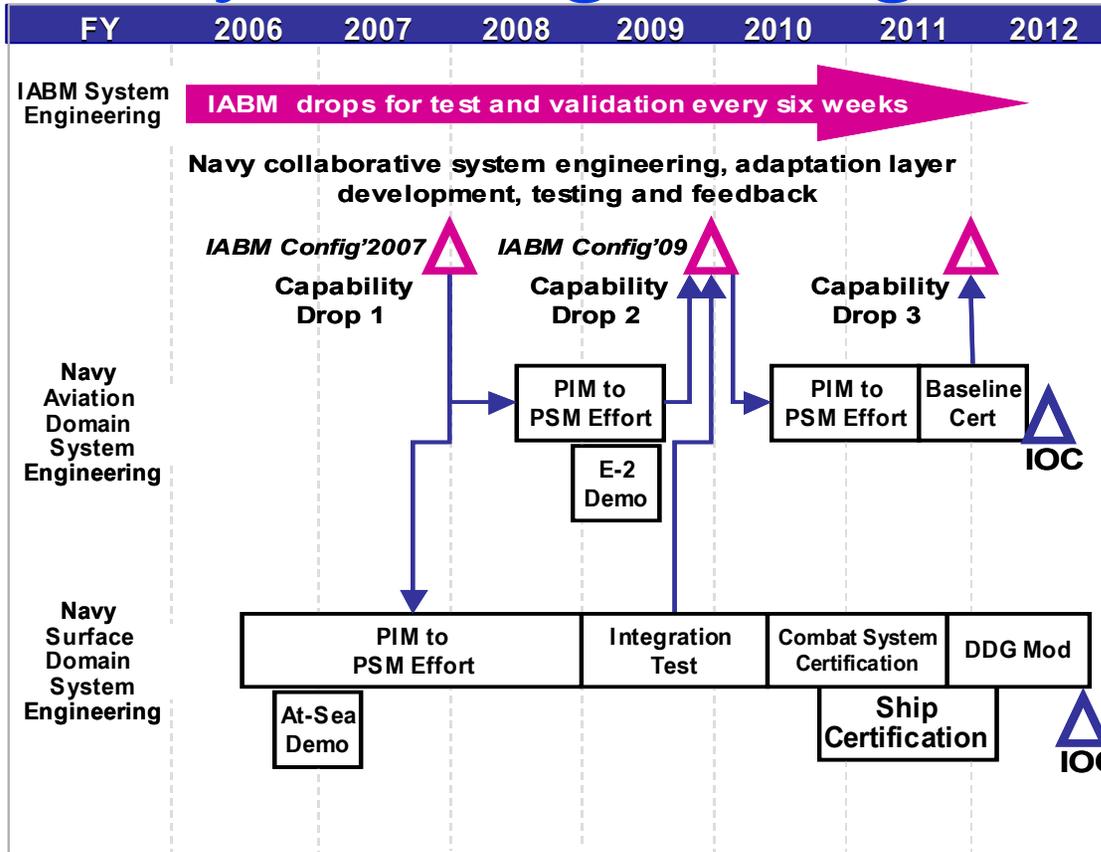
Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 7 of 9)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile	DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG
	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)

Navy SIAP System Engineering Schedule



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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	19.617	36.170	50.282	25.959	0.505	0.436	0.278
Project 3031/Single Int. Air Picture (SIAP)	19.617	36.170	50.282	25.959	0.505	0.436	0.278

A. (U) Mission Description and Budget Item Justification

Single Integrated Air Picture (SIAP) is the product of fused, near-real-time and real-time data from multiple sensors to allow development of common, continuous, and unambiguous tracks of all airborne objects in the surveillance area. All airborne objects must be detected, tracked, and reported. Each object must have one and only one track identifier and associated characteristics to be incorporated into SIAP. Current systems do not provide this capability. The Joint SIAP System Engineering Organization (JSSEO), approved by the Joint Requirements Oversight Council (JROC) in March 2000, was chartered in Oct 2000 by the Under Secretary of Defense (A&T) to perform "the system engineering needed to fix problems in the existing Joint Data Network (JDN) and to guide development toward a future SIAP capability."

This Joint engineering organization will develop tools/processes and perform system engineering that will identify cost effective fixes to US/coalition tactical data link systems. The resulting fixes will be addressed in incremental blocks designed to improve the SIAP. Each block will identify specific changes to be implemented in tactical systems to improve integrated air and missile defense/theater air warfare capabilities.

* Block 0 addressed four joint warfighting shortfalls selected for their impact on the Joint Data Network (JDN), their applicability across the Services, and the engineering maturity reflected by interface change proposals already on-record. The Block 0 issues addressed were a common correlation/decorrelation, formation tracking/correlation, identification taxonomy and symbology, and an identification (ID) conflict resolution matrix.

* Block 1 is addressing a set of JDN deficiencies approved by United States Joint Forces Command to provide warfighter benefits which can be implemented in the near-to mid-term. The issues being addressed are a further reduction of dual tracks, improved combat ID capability, improved data sharing (network capacity), and improved air picture for theater ballistic missile defense performance. Improvements addressing these issues will be implemented via integration of the Integrated Architecture Behavior Model (IABM) into the various Combat Systems being used or being developed by the Services including the Navy. Block 1 will also address Peer-to-Peer network and network Quality of Service issues.

This PE provides the resources for the Navy system engineering support to the Joint effort to develop SIAP capability and system engineering support to Navy Pathfinder Programs of Record (E-2, Aegis, SSDS) for integration of the Joint solution.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: FEBRUARY 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT. AIR PICTURE (SIAP) SYS ENG			PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		19.617	36.170	50.282	25.959	0.505	0.436	0.278
RDT&E Articles Qty		N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

At the direction of the Office of the Secretary of Defense and working in conjunction with the Joint SIAP System Engineering Organization (JSSEO), the Navy mission is to support the design, development and testing of a SIAP capability which satisfies requirements mandated by the Global Information Grid (GIG), Theater Air and Missile Defense (TAMD) and Combat Identification (CID) Capstone Requirements Documents (CRD). The SIAP capability will provide the Navy warfighter with the ability to better understand the battlespace and employ weapons to the full extent of their designed capabilities. The SIAP will support the spectrum of offensive and defensive operations by US, allied, and coalition partners in the airspace within a theater of operations (e.g., attack operations, suppression of enemy air defenses, air and missile defense, intelligence preparation of the battlefield). The SIAP is accomplished through a combination of materiel and nonmateriel improvements. This effort through the application of disciplined System Engineering processes, policies, products and services will enable the delivery of an integrated, interoperable, reliable, and maintainable Joint SIAP capability in Navy warfare systems/platforms, in support of Joint and Navy Mission Capabilities.

SIAP capability is being introduced through a series of improvements called Configurations (Capability Drops), targeted at eliminating specific interoperability issues, providing C4I enhancements, and delivering an executable integrated architecture. The engineering specifications and requirements developed by each configuration system engineering effort will be incorporated into the successive versions of the Joint IABM developed within a two year spiral capability improvement process. The delivered IABM will be used to develop the successive versions of the platform specific applications to be implemented in the Navy combat systems which will provide the Joint SIAP capability. The IABM will also be used as a standard against which to assess performance of the Navy combat systems in terms of Joint Force interoperability. The Navy is investing in the Open Architecture construct for many reasons, one of which is to create the combat system computing architecture which will permit the most rapid and least expensive implementation of the IABM and other Joint applications. To that end, this effort is also providing some resources to the Open Architecture system engineering process.

Implementation of a platform specific application in the Navy Pathfinder combat systems (E-2, Aegis, and SSDS), will reduce the risk of fratricide to US/coalition forces caused by incorrect correlation and ID association and enable our combatant commanders to exploit the full kinematic range of our weapons through better Joint Force integration.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)	
B. Accomplishments/Planned Program (Cont.)			
	FY05	FY06	FY07
Navy Block Upgrade Implementation	19.617	36.170	50.282
<p>(U)FY2005 ACCOMPLISHMENTS: The FY05 Block 1 effort was focused on completion of the reference algorithms for use in the IABM. Other FY05 efforts included completing alignment of the SIAP Integrated Architecture and Navy Open Architecture functional allocations. The host combat systems (Aegis, SSDS, E-2) continued migration efforts towards an open architecture computing environment to enable integration of the Joint IABM functionality. Navy Stakeholders continued required system engineering efforts including identification and correction of integration issues, and testing of the IABM software and functionality in a simulation/stimulation environment. Configuration 05 was delivered as an engineering prototype. Risk mitigations were conducted. Continued Block 0 efforts focused on completing implementation of the Common Correlation Algorithm in ACDS Block 0.</p> <p>(U) FY2006 PLAN: The FY06 Block 1 System Engineering effort is focused on completion of the IABM required to support Configuration 2007 (Capability Drop 1) delivery at the end of FY07. In addition, the Pathfinder Combat Systems (Aegis, SSDS, E-2) will continue to migrate to an open architecture computing environment in accordance with the Navy Open Architecture Roadmap. This will enable integration of the Joint IABM functionality. In support of integration, prototype adaptation layers and associated interface design specifications for the IABM will be developed this year. Engineering Assessments and developmental testing of the IABM software to validate and verify functionality in a simulation/stimulation environment will be conducted throughout the year. During the last quarter of this year, the Navy will conduct an at sea demonstration of a reference implementation of the IABM using the Common Network Interface as a host. Block 0 efforts are focused on integration of Interface Change Proposal TJ00-004 (ID Taxonomy) in the F/A-18 mission computer, verifying integration of ICP TM98-035 (Common Correlation Algorithm) in the E-2 mission computer, and supporting migration to open architecture in the Aegis and SSDS combat systems.</p> <p>(U) FY2007 PLAN: The FY07 System Engineering effort will be focused on completion of the adaptation layers and associated interface design specifications for the IABM which will support Capability Drop 1. These efforts include validation of the functionality to be delivered and review of the engineering artifacts which support development of the IABM based host specific applications for implementation. The Navy will continue engineering risk reduction efforts in support of IABM integration. The purpose of these system engineering efforts is to ultimately enable seamless integration of the IABM into host Navy Combat Systems. In addition, system engineering will continue in support of the joint spiral development of the IABM Configuration 2009 to be delivered in support of Capability Drop 2. Block 0 efforts will complete this year with the validation of the integration of Interface Change Proposal TJ00-004 (ID Taxonomy) in the F/A-18 mission computer and migration to open architecture in the Aegis and SSDS combat systems.</p>			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY2005	FY2006	FY2007
FY06 President's Budget	19.957	36.721	50.837
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Total Adjustments	<u>-0.340</u>	<u>-0.551</u>	<u>-0.555</u>
Summary of Adjustments			
General provisions	-0.011	-0.551	0.000
Programmatic changes	0.000	0.000	-0.555
SBIR	<u>-0.329</u>	<u>0.000</u>	<u>0.000</u>
Subtotal	<u>-0.340</u>	<u>-0.551</u>	<u>-0.555</u>
Schedule: See Attached R4.			
Technical: Not Applicable			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)
<p>D. OTHER PROGRAM FUNDING SUMMARY: Block 1</p> <p><u>Line Item No. & Name</u> Related RDT&E: Computer programs developed under these programs are tested in their integrated configuration.</p> <p>PE 0605853N 3039 (CHENG) PE 0205604N 2126 (CDLMS) PE 0603582N 0164(DEP) PE 0604307N 1447 (AEGIS) PE 0604755N 2178 (SSDS) PE 0604518N 1604 (ACDS) PE 0603658N 2039 (CEC) PE 0204136N 1662 (F/A 18) PE 0204152N 0463 (E2C)</p> <p>E. Acquisition Strategy: Not Applicable</p> <p>F. MAJOR PERFORMERS:</p> <p>Naval Surface Warfare Center, Dahlgren VA - Surface Combatant System Engineering and Computer Integration Naval Air Warfare Center Aircraft Division, Patuxent River MD - Aircraft Platform Integration and System Engineering Space and Warfare Systems Command, San Diego CA - System Communication</p>		

R-1 SHOPPING LIST - Item No. 78

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Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER							
RDT&E, N/BA-4			0603879N			3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE							
Cost Categories (Tailor to WBS, or System/Item Req't)	Contract Method & Type	Performing Activity & Location	Total *PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date		Cost to Complete	Total Cost	Target Value of Contract
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	MIPR	Navy PEO/TSC, Arlington VA	1.129	0.000		0.000		0.000			0.000	0.000	
	MIPR	Air Force ESC, Boston MA	1.329	0.000		0.000		0.000			0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.621	0.000		0.000		0.000			0.000	0.000	
	VAR	Contract Supt, Various	5.155	0.000		0.000		0.000			0.000	0.000	
Subtotal Block 0			10.308	0.000		0.000		0.000					
Block 1 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	15.340	0.000	VAR	0.000	VAR	0.000	VAR		0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	16.085	0.000		0.000		0.000			0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	17.114	0.000		0.000		0.000			0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	7.045	0.000		0.000		0.000			0.000	0.000	
	VAR	Contract Supt, Various	20.699	0.000		0.000		0.000			0.000	0.000	
Subtotal Block 1			76.282	0.000		0.000		0.000			0.000	0.000	
Block 2 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	2.060	0.000	VAR	0.000	VAR	0.000	VAR		0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	2.266	0.000		0.000		0.000			0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	2.369	0.000		0.000		0.000			0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	1.030	0.000		0.000		0.000			0.000	0.000	
	VAR	Contract Supt, Various	2.271	0.000		0.000		0.000			0.000	0.000	
Subtotal Block 2			9.996	0.000		0.000		0.000					
Architecture (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	1.536	0.000	VAR	0.000	VAR	0.000	VAR		0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	1.625	0.000		0.000		0.000			0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	1.684	0.000		0.000		0.000			0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.786	0.000		0.000		0.000			0.000	0.000	
	VAR	Contract Supt, Various	2.364	0.000		0.000		0.000			0.000	0.000	
Subtotal Architecture			7.995	0.000		0.000		0.000					
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0.988	0.000	VAR	0.000	VAR	0.000	VAR		0.000	0.000	
Tools & Analysis	MIPR	Navy PEO/TSC, Arlington VA	0.876	0.000		0.000		0.000			0.000	0.000	
(JSSEO)	MIPR	AF ESC/DI, Boston MA	1.206	0.000		0.000		0.000			0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.520	0.000		0.000		0.000			0.000	0.000	
	VAR	Contract Supt, Various	1.191	0.000		0.000		0.000			0.000	0.000	
Subtotal SE Tools & Analysis			4.781	0.000		0.000		0.000			0.000		
Validation and Certification	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren V	7.000	0.000		0.000		0.000					
BLOCK 0 (NAVY)					VAR		VAR		VAR				CONT
	VAR	NAVSEA, Washington DC	1.174	0.000		0.000		0.000			CONT	CONT	
	VAR	PEO IWS, Washington, DC	4.476	1.400		1.600		1.200			CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD	4.757	0.000		0.000		0.000			CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA	3.428	0.000		0.000		0.000			CONT	CONT	
	PD	CHENG, Washington, DC	0.500	0.000		0.000		0.000			CONT	CONT	
Subtotal BLOCK 0			14.335	1.400		1.600		1.200			CONT	CONT	
BLOCK 1 (NAVY)					VAR		VAR		VAR				CONT
	VAR	NAVSEA, Washington DC	0.000	3.450		11.658		1.691			CONT	CONT	
	VAR	PEO IWS, Washington, DC	0.000	7.082		10.094		28.682			CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD	0.000	4.493		9.188		12.939			CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA	0.000	3.192		3.630		5.770			CONT	CONT	
	PD	CHENG, Washington, DC	0.000	0.000		0.000		0.000			CONT	CONT	
Subtotal BLOCK 1			0.000	18.217		34.570		49.082			CONT	CONT	
SUBTOTAL			130.697	19.617		36.170		50.282		0.000	CONT	CONT	
Remarks:													

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CLASSIFICATION:

DATE: FEBRUARY 2006

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT		PROJECT NAME AND NUMBER									
RDT&E, N/BA-4			0603879N		3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE									
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Operational Test & Evaluation														
Tooling														
GFE														
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			0.975											
Travel			0.180											
Labor (Research Personnel)														
Rent/Const/Utilities/Computers														
Subtotal Management (JSSEO)			1.155	0.000		0.000		0.000			0.000	CONT	CONT	
Remarks:														
Total Cost			131.852	19.617		36.170		50.282			0.000	CONT	CONT	
Remarks:														

R-1 SHOPPING LIST - Item No.

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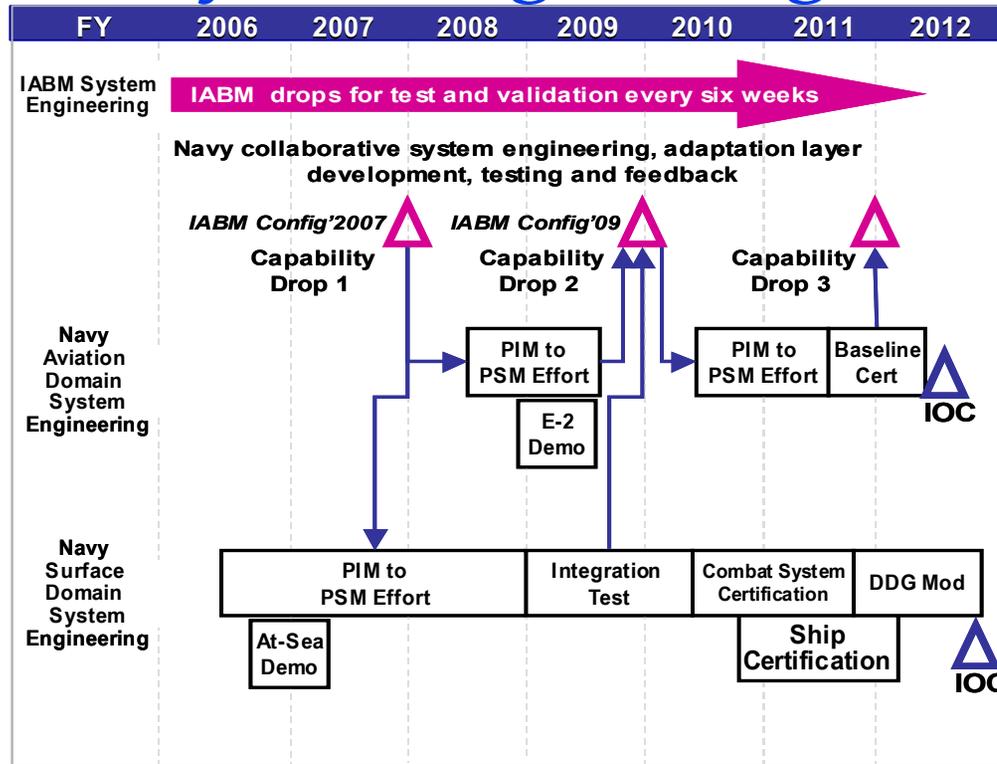
UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: FEBRUARY 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)

Navy SIAP System Engineering Schedule



R-1 SHOPPING LIST - Item No. 78

Exhibit R-4 RDTEN, Schedule Detail
(Exhibit R-4, page 8 of 9)

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /						R-1 ITEM NOMENCLATURE 0604272N, TADIRCM		
BA 4								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	21.341	9.807	20.527	45.689	63.765	38.572	42.464	
3040 ANTI-MISSILE TECHNOLOGY (TADIRCM)	6.994	9.807	20.527	45.689	63.765	38.572	42.464	
3166 CH-53 DIRCM TAP	14.347							

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

TADIRCM is a Tactical Aircraft Directed InfraRed Countermeasure system. TADIRCM provides the warfighter with protection against surface and air to air missiles. This project looks at the infrared (IR) MANPAD & surface to air (SAM) threat. FY 2005 Congressional language provided funding for the completion of the Early Operational Assessment (EOA) project into flight test. The completion is scheduled for 2006.

Strike Directed Infrared Countermeasure System Development and Demonstration (Strike DIRCM SDD) designed for fixed wing aircraft is an anticipated ACAT II program, which anticipates receiving a MS B decision in First Quarter FY 2007. The Strike DIRCM SDD will leverage information gained during the EOA to develop and field a DIRCM system for Naval assault aircraft by 2013. Strike DIRCM is needed for protection against Surface to Air and Air-to-Air IR threats. Strike DIRCM regains airspace below 20K feet. DIRCM neutralizes the IR threat.

Assault DIRCM is anticipated to IOC in 1st quarter FY 2014. Assault DIRCM is an advanced capability against the IR SAM threat. Recent losses to assault aircraft, as a result of IR SAMs, require an advanced DIRCM solution.

CH-53 Directed InfraRed Countermeasures (DIRCM) Technology Assessment Program (TAP) is a FY 2005 Supplemental Add. The funding will be used for the test of all applicable USSOCOM MH-53 DIRCM system capable hardware and software, hardware-in-the-loop countermeasure effectiveness modeling and simulation, the integration and installation of a flight testing, a complete de-modification of the aircraft will be performed to return it to a serviceable condition.

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME	
RDT&E, N / BA 4		0604272N, TADIRCM					3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)	
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
3040 ANTI-MISSILE TECHNOLOGY (TADIRCM)	6.994	9.807	20.527	45.689	63.765	38.572	42.464	
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>TADIRCM is a Tactical Aircraft Directed InfraRed Countermeasure system. TADIRCM provides the warfighter with protection against surface and air to air missiles. This project looks at the infrared (IR) MANPAD & surface to air (SAM) threat. FY 2005 Congressional language provided funding for the completion of the Early Operational Assessment (EOA) project into flight test. The completion is scheduled for 2006.</p> <p>Strike Directed Infrared Countermeasure System Development and Demonstration (Strike DIRCM SDD) designed for fixed wing aircraft is an anticipated ACAT II program, which anticipates receiving a MS B decision in First Quarter FY 2007. The Strike DIRCM will leverage information gained during the EOA to develop and field a DIRCM system for Naval assault aircraft by 2013. Strike DIRCM is needed for protection against Surface to Air and Air-to-Air IR threats. Strike DIRCM regains airspace below 20K feet. TADIRCM neutralizes the IR threat.</p> <p>Assault DIRCM is anticipated to IOC in 1st Quarter FY 2014. Assault DIRCM is an advanced capability against the IR SAM threat. Recent losses to assault aircraft, as a result of IR SAMs, require an advanced DIRCM solution.</p>								

EXHIBIT R-2a, RDT&E Project Justification			DATE:
			February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
Accomplishments / Effort / Sub-total Cost	6.994		
RDT&E Articles Qty			

The objective of this Tactical Aircraft Directed InfraRed Countermeasure (TADIRCM) Initial Suitability project is to take science and technology components and configure into an airborne pod and perform limited effectiveness testing. The output will be test articles consisting of a 2-color missile warning sensor or sensors to detect and declare the threat; an off-the-shelf Advanced Technology Demonstration laser coupled to a new miniature pointer/tracker which takes the declared threat from the missile warning and passes to a fine track sensor in the pointer/tracker, subsequently slewing and applying laser energy to counter the threat. All this will be contained within a newly designed wing-mounted pod. FY 2005 accomplishments include the POD design and build, the delivery of 2 missile warning sensors, design and build of the system processor, and design and build of pointer/tracker by two separate contractors.

	FY 2005	FY 2006	FY 2007
Accomplishments / Effort / Sub-total Cost		9.807	20.527
RDT&E Articles Qty			

FY06 continues efforts begun with the design and build of a podded DIRCM system, (incorporating missile warning sensors, system processor and pointer/tracker), and flight test the pod to provide an assessment of the advanced technology in simulated flight conditions. Information gained during this Early Operational Assessment (EOA) will be leveraged to develop and field a DIRCM system for Strike aircraft by 2013, and Assault aircraft by 2014.

In conjunction with the flight testing of the DIRCM pod, intensive pre-SDD efforts begin in FY 2006 including but not limited to: Analysis of Alternatives (AOA) for Strike and Assault DIRCM, pre-SDD contracting actions, initiation of program documentation to support milestone B decision in FY 2007, and development of applicable modeling and simulation models beginning in FY 2007.

Strike Directed Infrared Countermeasure System Development and Demonstration (Strike DIRCM SDD) designed for fixed wing aircraft is an anticipated ACAT II program, which anticipates receiving a MS B decision in First Quarter FY 2007 and an SDD contract award in 3rd Quarter FY 2007. Strike DIRCM is needed for protection against Surface-to-Air and Air-to-Air IR threats. Strike DIRCM regains airspace below 20K feet. Assault DIRCM is an advanced capability against the IR SAM threat. Recent losses to assault aircraft, as a result of IR SAMs, require an advanced DIRCM solution.

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)
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C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	7.133	9.956	22.003
Current BES /President's Budget:	6.994	9.807	20.527
Total Adjustments	-0.139	-0.149	-1.476

Summary of Adjustments

Congressional Reductions			
Congressional Rescissions			
Congressional Undistributed Reductions	-0.141	-0.104	
Congressional Increases	0.002		
Economic Assumptions		-0.045	0.121
Miscellaneous Adjustments			-1.597
Subtotal	-0.139	-0.149	-1.476

Schedule:

Schedule has changed as a result of technical issues with the Army's Suite of Integrated Infra-Red Countermeasures (SIIRCM) system and delays in contract deliveries.

Technical:

In June 2005, it was determined that the Army's Advanced Technology Infrared Countermeasure (ATIRCM) was not meeting all of it's performance requirements within the curent schedule, resulting in a program deviation report. In December 2005, the Army revised their ATIRCM acquisition strategy which delayed future ATIRCM spirals until 2010.

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME				
RDT&E, N /		0604272N, TADIRCM				3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)				
D. OTHER PROGRAM FUNDING SUMMARY:		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
APN-5, Line 50 Common ECM, OSIP 001-11								37.000		37.000
<p>E. ACQUISITION STRATEGY: The management and acquisition strategy for the Tactical Aircraft Directed InfraRed Countermeasure (TADIRCM) Initial Suitability assessment entails a competitive phased approach to reduce risk to cost and schedule through viable competition. This Early Operational Assessment (EOA) project awarded two contracts for pointer/tracker/laser development, one contract for pod development, and one contract for missile warning sensors. The Naval Research Lab will be the technical lead in integration of these pointer/trackers, lasers, and sensors within the pod utilizing government furnished processors and ancillary data recording equipment. The Navy selected one contractor in FY 2005 to one pointer/tracker/laser contract at the fabrication point to ensure the project does not exceed budget and can be executed as described here.</p> <p>The Assault Directed Infrared Countermeasure (DIRCM) program is anticipated to be a spiral upgrade to the Army's Suite of Integrated Infrared Countermeasures (SIIRCM), whereas the lead of this spiral upgrade has yet to be determined. The Army and Navy will pursue a common solution on a joint set of requirements for this spiral upgrade. It is anticipated this spiral upgrade DIRCM solution will address the more advanced IR SAMs.</p> <p>The Strike DIRCM program will maximize use of technology developed under the EOA. Strike DIRCM is a podded family of systems. The program will accomplish component redesign/repackaging necessary to survive the tactical aircraft environment. The program will conduct tests to verify system performance meets the tactical environment.</p>										

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N /		0604272N, TADIRCM				3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)						
Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
PRODUCT DEVELOPMENT												
Primary Hdw Development	C-CPFF	GALAXY SCIENTIFIC CORP, EGG HARBOR	4.143	1.010	1/19/2005					5.153	5.153	
Primary Hdw Development	C-CPFF	RAYTHEON TECH SVCS, INDIANAPOLIS,IN	1.430	1.245	1/19/2005					2.675	2.675	
Primary Hdw Development	C-CPFF	TBD				1.600	TBD	15.882	12/1/2006	170.484	187.966	
Primary Hdw Development	VARIOUS	VARIOUS	1.600	.545	VARIOUS					2.145	2.145	
Systems Eng	RX	TEKLA	1.950	.689	9/8/2005					2.639	2.639	
SUBTOTAL PRODUCT DEVELOPMENT			9.122	3.489		1.600		15.882		170.484	200.577	
Remarks:												
SUPPORT												
Configuration Management	VARIOUS	VARIOUS				.050	VARIOUS	.100	VARIOUS	1.508	1.658	
Development Support	VARIOUS	VARIOUS						.170	VARIOUS	1.900	2.070	
Integrated Logistics	VARIOUS	VARIOUS				.150	VARIOUS	.150	VARIOUS	2.600	2.900	
Software Development	VARIOUS	VARIOUS		.050	VARIOUS	.300	VARIOUS	.202	VARIOUS	9.750	10.302	
Studies & Analysis Non-FFRDC	C-CPFF	JOHNS HOPKINS UNIV, COLUMBIA, MD		.600	4/11/2005						.600	
Studies & Analysis Non-FFRDC	C-CPFF	MACAULAY-BROWN INC, DAYTON, OH		.290	4/11/2005						.290	
Studies & Analysis Non-FFRDC	C-CPFF	TBD				2.000	TBD				2.000	
SUBTOTAL SUPPORT				.940		2.500		.622		15.758	19.820	
Remarks:												
TEST & EVALUATION												
Developmental T&E	VARIOUS	VARIOUS						.250	VARIOUS	5.100	5.350	
Live Fire Support	WX	NAWCWD, CHINA LAKE CA						1.250	6/1/2007	21.200	22.450	
Operational Test & Evaluation	WX	OPER T & E FOR CD 30, NORFOLK VA		.015	10/26/2004	.394	5/15/2006			7.700	8.109	
Technical Maturation	WX	NRL, WASHINGTON DC	.200	1.900	3/1/2005						2.100	
Technical Maturation	WX	VARIOUS				.573	VARIOUS				.573	
Test Assets	WX	NAWCWD, CHINA LAKE CA				.500	4/15/2006	.250	5/1/2007	6.925	7.675	
Eng & Evaluation	WX	VARIOUS				2.000	VARIOUS				2.000	
Eng & Evaluation (NON-FFRDC)	RX	TEKLA				.447	3/15/2006				.447	
SUBTOTAL TEST & EVALUATION			.200	1.915		3.914		1.750		40.925	48.704	
Remarks:												
MANAGEMENT												
Direct Support Costs	VARIOUS	VARIOUS	.006	.138	VARIOUS	.037	VARIOUS				.181	
Eng & Tech Spt (NON-FFRDC)	VARIOUS	VARIOUS		.050	VARIOUS	.200	VARIOUS	.200	VARIOUS	3.200	3.650	
Government Engineering Support	WX	NAWCAD, PATUXENT RIVER MD	.085	.405	11/23/2004	.720	11/15/2005	.200	11/15/2006	10.100	11.510	
NAWCAD/Pax Support	WX	NAWCAD, PATUXENT RIVER MD				.500	1/1/2006	1.500	12/1/2006		2.000	
Program Mgt Support (NON-FFRDC)	VARIOUS	TBD				.200	VARIOUS				.200	
NAWCWD/Pt Mugu Support	WX	NAWCWD, PT MUGU CA						.350	12/1/2006		.350	
Transportation	WX	DIA, REDSTONE ARSENAL AL		.007	2/1/2005						.007	
Travel	WX	NAWCAD, PATUXENT RIVER MD	.033	.050	10/1/2004	.136	10/1/2005	.023	10/1/2006	.190	.432	
SUBTOTAL MANAGEMENT			.124	.650		1.793		2.273		13.490	18.330	
Remarks:												
Total Cost			9.446	6.994		9.807		20.527		240.657	287.431	
Remarks:												

CLASSIFICATION:																												
EXHIBIT R4, Schedule Profile																				DATE: February 2006								
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N /					PROGRAM ELEMENT NUMBER AND NAME 0604272N TADIRCM										PROJECT NUMBER AND NAME 3040 TADIRCM													
Fiscal Year	2005				2006				2007				2008				2009				2010				2011			
	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
Pod Contract	█				█																							
MWS Contract	█																											
Software Development and Test	█				█																							
Flight Test									█																			
EOA Report													△															
Strike DIRCM SDD Contract													△															
PDR													△															
CDR																	△											
DT/OT																					△							
Assault DIRCM AoA					△				△																			
Strike DIRCM AoA					△				△																			

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME		
RDT&E, N /		0604272N, TADIRCM				3166, CH-53 DIRCM TAP		
BA 4								
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
3166 CH-53 DIRCM TAP	14.347							
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>CH-53 Directed InfraRed Countermeasures (DIRCM) Technology Assessment Program (TAP) FY 2005 Supplemental funding is for the fabrication and installation of a temporary modification of a Navy/Marine Corps CH-53E aircraft with the same DIRCM capability as currently employed on the USSOCOM MH-53.</p>								

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM
		PROJECT NUMBER AND NAME 3166, CH-53 DIRCM TAP

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007	
Accomplishments / Effort / Sub-total Cost	14.347			
RDT&E Articles Qty				

This FY 2005 Supplemental funding will be used for the test of all applicable USSOCOM MH-53 Directed InfraRed Countermeasures (DIRCM) system capable hardware and software, hardware-in-the-loop countermeasure effectiveness modeling and simulation, the integration and installation of a flight test instrumentation package, support of Government conducted ground and flight test to include data reduction and analysis. After completion of flight testing, a complete de-modification of the aircraft will be performed to return it to a serviceable condition.

APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3166, CH-53 DIRCM TAP
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C. PROGRAM CHANGE SUMMARY

Funding:	FY 2005	FY 2006	FY 2007
Previous President's Budget:	0.000		
Current BES / President's Budget:	14.347	0.000	0.000
Total Adjustments	<u>14.347</u>	<u>0.000</u>	<u>0.000</u>

Summary of Adjustments

Congressional Reductions			
Congressional Rescissions			
Congressional Undistributed Reductions	-0.553		
Congressional Increases	14.900		
Economic Assumptions			
Miscellaneous Adjustments			
Subtotal	<u>14.347</u>	<u>0.000</u>	<u>0.000</u>

Schedule: Not applicable.

Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	BA 4	February 2006
	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3166, CH-53 DIRCM TAP
D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable		
E. ACQUISITION STRATEGY: Not Applicable.		

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE PE 0604327N-Hard & Deeply Buried Target Defeat System Program
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COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	9.6	7.2	77.0	69.0	0.0	0.0	0.0
9611- Advanced Conventional Strike Capability Demonstration	9.6	0.0	77.0	69.0	0.0	0.0	
9999 - Congressional Add	0.0	7.2	0.0	0.0	0.0	0.0	0.0

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

The Nuclear Posture Review (NPR), Quadrennial Defense Review (QDR), and Defense Planning Guidance (DPG) all describe a future military that will be able to respond rapidly, anywhere around the world, with the required flexibility to meet a variety of contingencies. National security will depend on the ability of the U.S. military to respond within a complex and uncertain security environment which is characterized more and more by asymmetric threats. Strategic Strike, specifically Prompt Global Strike (PGS), describes a concept for conducting a strike globally, precisely, and rapidly with kinetic effects against high payoff and time sensitive targets.

The efforts herein support the ability to produce affordable solutions (i.e., ballistic missiles from an underwater environment) to answer the PGS need. Projects 9611 and 9999 support both Advanced Strike Capability Demonstrations contracted in FYs 2005 and 2006 (which will demonstrate the feasibility of producing intermediate size low-cost rockets) and the development in FYs 2007 and 2008 of a modification to the TRIDENT II (D5) strategic weapon system (SWS) known as the Conventional TRIDENT Modificaton (CTM) which will allow it to carry conventional payloads.

R-1 SHOPPING LIST - Item No. 81

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	PROJECT NUMBER AND NAME Advanced Conventional Strike Capability 9611

COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost J9611Advanced Conventional Strike Capability Demonstration	9.6	0.0	77.0	69.0	0.0	0.0	0.0
RDT&E Articles Qty							

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

This project supports efforts for both Advanced Strike Capability which will demonstrate the feasibility of producing intermediate size low cost rockets, and the development of a modification to the TRIDENT II (D5) strategic weapon system (SWS) to allow it to carry conventional payloads (Conventional TRIDENT Modification (CTM)).

The Conventional TRIDENT Modification (CTM) will adapt the TRIDENT II (D5) missile to carry conventional payloads. SSP intends to modify the existing D5 SWS to carry conventional payloads as an affordable approach to providing Combatant Commanders near term kinetic PGS capability. This strategy leverages an established program and its personnel, contractor base, and infrastructure to rapidly field a desired capability. This new capability is needed to defeat a diverse set of unpredictable threats, such as Weapons of Mass Destruction and Effect (WMD/E), on short notice without the requirement for a forward-deployed or visible presence and without risk to the U.S. forces and with little or no warning prior to strike. CTM will complement nuclear weapons in their deterrent role and is an evolution of deterrence away from the complete dependence on nuclear weapons.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:	February 2006
APPROPRIATION/BUDGET ACTIVITY		PROJECT NUMBER AND NAME	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4		9611 Advanced Conventional Strike	
		Capability Demonstration	

B. (U) Accomplishments/Planned Program

		FY 05	FY 06	FY 07
Advanced Conventional Strike Demo		9.6	0.0	77.0
RDT&E Articles Quantity				

(U) FY 2005 ACCOMPLISHMENTS

- (U) (\$9.6) Initiated Advanced Conventional Strike Capability efforts. Fully obligated.
 FY 2005 efforts included:
 - (U) Developed program plan.
 - (U) Completed affordability missile trade study
 - (U) Conducted rocket motor ground tests.
 - (U) Completed rocket motor performance assessment.

(U) FY 2006 PLAN N/A

(U) FY 2007 PLAN

- (U) (\$77.0) Initiate development of Advanced Conventional Strike Capability efforts specifically aimed at modifying the TRIDENT II (D5) strategic weapon system (SWS) to carry conventional payloads with high accuracy. Full obligation is projected by first quarter of first year.
 FY 2007 efforts include:
 - (U) Develop a Conventional TRIDENT Modification (CTM) program plan.
 - (U) Finalize design of a Small Inertial Measurement Unit (SRIMU) and the flap system that will fit within the space limits of a maneuvering body extension to the Reentry Body.
 - (U) Design an interface between a new Guidance system that will be housed within the Reentry Body extension and the missile system flight controls.
 - (U) Begin development of a conventional payload that can be contained within the current envelope of the Mk4 Reentry Body which will entail designing and fabricating both the actual warhead as well as development of a fuze for the new application.
 - (U) Design alternative Reentry Body materials that will be able to provide thermal and shock load protection to the warhead and its associated components from the environments encountered on ballistic reentry.
 - (U) Initiate modification of existing facilities to test CTM designs.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	PROJECT NUMBER AND NAME 9611 Advanced Conventional Strike

Capability Demonstration

C. (U) Program Change Summary

(U) Funding:	FY 05	FY 06	FY 07
FY2006 President's Budget	9.9	0.0	0.0
FY2007 President's Budget	9.6	0.0	77.0
Total Adjustments	-0.3	0.0	77.0
Summary of Changes:			
SBIR	-0.3	0.0	0.0
Programmatic Adjustments	0.0	0.0	77.0
TOTAL	-0.3	0.0	77.0

D. (U) Other Program Funding Summary: (Dollars in Thousands)

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Total Complete</u>	<u>Total Cost</u>
WPN/BA1/1250/PE 0101228N			38.0	146.0	112.0	31.0		0.0	327.0
OPN/BA4/5358/PE 0101221N			12.0	10.0	6.0	2.0		0.0	30.0

E. (U) Acquisition Strategy:

Sole Source Contracts

F. (U) Major Performers:

- LMMS/CA - Conventional Strike - Missile Trade Study
- APL/MD - Conventional Strike - Rocket Motor performance assessment
- AERO/CA - Conventional Strike - Rocket Motor Ground tests
- DOE/NM - Conventional TRIDENT Modification - Reentry Body materials
- LMMS/CA - Conventional TRIDENT Modification - SRIMU development
- CSDL/MA - Conventional TRIDENT Modification - Guidance Interface

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CLASSIFICATION:

Exhibit R-3 Cost Analysis										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA-4				PROGRAM ELEMENT PE 0604327N Hard & Deeply Buried Target Defeat System				PROJECT NUMBER AND NAME 9611 Advanced Conventional Strike Capability Demonstration						

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support & Management														
Conventional Strike	SS-CPFF	LMSS (CA)				9.3	06-05					Cont.	Cont.	TBD
Conventional Strike	PD	APL				0.2	06-05					Cont.	Cont.	TBD
Conventional Strike	SS-CPFF	AERO (CA)				0.1	06-05					Cont.	Cont.	TBD
Conventional Strike (CTM)	MIPR	DOE (NM)								40.0	10-06	Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	LMSS (CA)								30.0	10-06	Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	CSDL (MA)								3.0	10-06	Cont.	Cont.	TBD
Conventional Strike (CTM)	VARIOUS	VARIOUS								4.0	10-06	Cont.	Cont.	TBD
Subtotal Product Development			0.0	0.0		9.6		0.0		77.0		Cont.	Cont.	TBD

Remarks:

Total Cost			0.0	0.0		9.6		0.0		77.0		Cont.	Cont.	

Remarks:

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CLASSIFICATION:

EXHIBIT R-4, Schedule Profile																	DATE: February 2006											
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NUMBER AND NAME:								PROJECT NUMBER AND NAME															
RDT&E,N / BA4					PE 0604327N Hard and Deeply Buried Defeat Systems								J9611 Advanced Conventional Strike - Conventional Trident Mod (CTM), Project 1															
Fiscal Year	FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
	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
Contract Go-ahead and Milestones									△ Contract Go								△ IOC								△ FOC			
System Development & Demonstration									[Bar]																			
Initial Production Baseline													[Bar]															
Production and Deployment													[Bar]															
Systems Engineering Reviews									△ IBR	△ PDR			△ CDR			△ PRR												
System Integration Test - Mock-up											△																	
Systems Integration Test - Engineering Development Units											[Bar]																	
Systems Integration Test - Production Proofing Units													[Bar]															
System Flight Test IOC DASO																	△											
System Flight Test Post - IOC FCETs																			△						△			

R-1 SHOPPING LIST - Item No. 81

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CLASSIFICATION:

EXHIBIT R-4a, Schedule Detail						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA4		PROGRAM ELEMENT NUMBER AND NAME: PE 0604327N Hard and Deeply Buried Defeat Systems			PROJECT NUMBER AND NAME J9611 Advanced Conventional Strike - Conventional Trident Mod (CTM), Project 1		
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Contract Go-ahead and Milestones			1Q				
System Development & Demonstration			1-4Q	1-4Q			
Initial Production Baseline				1-4Q			
Production and Deployment					1-4Q	1-4Q	
Systems Engineering Reviews			1-2Q	1Q			
System Integration Test - Mock-up			3Q	1Q			
Systems Integration Test - Engineering Development Units			4Q				
Systems Integration Test - Production Proofing Units				3Q			
System Flight Test IOC DASO					1Q		
System Flight Test Post - IOC FCETs						1Q	1Q

R-1 SHOPPING LIST - Item No. 81

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	PROJECT NUMBER AND NAME 9887N Submarine Launched Intermediate Range Ballistic Missile	

B. (U) Accomplishments/Planned Program

	FY 05	FY 06	FY 07
Advanced Conventional Strike Demo	0.0	7.2	0.0
RDT&E Articles Quantity			

(U) FY 2005 PLAN N/A

(U) FY 2006 PLAN

(U) (\$7.2) Continue Advanced Conventional Strike Capability efforts. Conduct a strategic ballistic missile technology demonstration. Full obligation is projected by third quarter of first year.

FY 2006 efforts include:

(U) Manufacture and conduct a test firing of a first stage solid rocket motor suitable for an intermediate-sized ballistic missile.

(U) Conduct one chamber hydroburst

(U) One (1) full scale motor static test with TVC actuation.

(U) FY 2007 PLAN N/A

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total PE	25,204	35,224	43,909	51,445	57,930	68,441	68,756
0798 OTH TARGETING	1,691	1,596	2,006	2,095	2,138	2,195	2,240
2144 SPACE AND ELECTRONIC WARFARE ENGINEERING	10,943	10,146	11,041	11,475	11,718	11,931	12,168
2357 MARITIME BATTLE CENTER	12,570	23,482	30,862	37,875	44,074	54,315	54,348

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) contains three projects: Maritime Battle Center (MBC), Over-the-Horizon Targeting (OTH-T), and Space and Electronic Warfare (SEW) Engineering. The projects are systems engineering non-acquisition programs with the objectives of developing, testing, and validating Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support naval missions in Joint and Coalition Theater. The mission of this PE is carried out by multiple tasks that are used to ensure Naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into service-oriented architecture delivering net centric warfare capability. Additionally, the program ensures that (1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the Naval C4ISR architecture and enhance warfighting capability as related to the objectives of National Defense Strategy and evolving joint visions and direction, such as Joint Vision 2020 (JV 2020), "Sea Power 21" and "Net-Centric Capability" and are guided by warfighter requirements; and (2) that SEW systems and systems integration efforts involve leading-edge technology transfer of information processing technologies primarily through integration of government and commercial off-the-shelf (GOTS/COTS) products to enhance the Navy's operational capability, interoperability, warfighter effectiveness, flexible reconfiguration, as well as reduce costs; and (3) that SEW systems integration efforts promote the delivery of FORCENet and the Navy's contribution to the Global Information Grid (GIG). The MBC is

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

a distributed organization focusing on experimentation concept development and analysis tasks are coordinated by the Navy Warfare Development Command (NWDC). The MBC will also act as the Navy representative to the Joint Battle Center and the Battle Labs of other services.

B. PROGRAM CHANGE SUMMARY:

	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
FY 2006 President's Budget Submission	25,602	44,469	49,412
Congressional Undistributed Reductions/Rescissions	-19	-726	0
Execution Adjustments	-277	0	0
Functional Realignment for OPNAV Program Support Costs	0	0	-263
FY 2005 SBIR	-107	0	0
Program Adjustments	5	-8,519	-5,422
Rate Adjustments	0	0	182
FY 2007 President's Budget Submission	25,204	35,224	43,909

PROGRAM CHANGE SUMMARY EXPLANATION:

Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

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FY 2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2

DATE: Feb 2006

BUDGET ACTIVITY: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

E. PERFORMANCE METRICS:

OTH Targeting and Propulsion Technology Demonstration:

- Earned Value Management (EVM) is used for metrics reporting and risk management.

Maritime Battle Center:

- Refines concepts and identifies key performance levels necessary for implementation.
- Demonstrate feasibility and discriminate among competing concepts and implementation alternatives.
- Understand potential military effectiveness and risk.
- Evaluate how much of the new capability and attendant force structure is needed.
- Learn how to operate the new force and combine it with the legacy force.
- Develop recommended DOTMLPF changes.
- Develop fleet warfighting requirements for submission to the OPNAV Navy Capabilities Development Process (NCDP) to inform Navy acquisition decisions.
- Integrate emergent concepts and technologies, leading to rapid introduction of needed warfighting capabilities in the fleet.
- Rapidly mature Sea Shield, Sea Strike, Sea Basing, and FORCEnet concepts, technologies, and doctrine.
- Focus on near, mid and long term warfighting challenges to realize increased warfighting effectiveness.

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
0798 OTH TARGETING	1,691	1,596	2,006	2,095	2,138	2,195	2,240

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The OTH-T/Allied Interoperability program provides a virtual, global systems integration and test facility for C4ISR technology that supports the collection, transmission, correlation, and display of track data into Common Operational and Tactical Pictures (COTP) in support of warfighting requirements. The common view of the battle space applies across the spectrum of warfare missions. However, technology and doctrine has changed radically. The first objective of the OTH-T/Allied Interoperability program is to transition the Joint/Navy architectures and systems to state-of-the-art COTS and GOTS products that support Network Centric Warfare. The second objective is to support development, integration, and joint interoperability of all National Security System (NSS), IT, and C4I systems into warfighting capabilities. This support includes providing technical expertise afloat and ashore via a cadre of highly trained Fleet Systems Engineers in order to integrate, validate, and evaluate new OTH-T/Allied Interoperability capabilities during major Fleet exercises and demonstrations. The OTH-T/Allied Interoperability program integration and testing in support of warfighting capabilities includes joint and coalition interoperability testing for C4ISR equipment. Coalition and joint interoperability is an important issue for future naval operations, especially with the Navy initiative to expand Internet Protocol (IP) networking throughout the Fleet (NMC/BLII) with the GIG. Currently, specific solutions do not exist to solve the IP connectivity issue with Coalition forces. Funding allows for development of solutions for emerging Coalition and joint interoperability requirements. Data throughput needs to be increased for the exchange of large size files within the limitations of high frequency (HF) medium in support of, for example, Collaboration at Sea (CAS). Funding allows for further development of potential solutions for merging improved transmission control protocol/internet protocol (TCP/IP) capability with advance digital network systems (ADNS) and existing international standards (e.g. STANAG 5066). Funding will also allow for development of Subnet Relay protocols and automatic link establishment standards, which provides for a significant improvement within, and between, battle groups.

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
ADVANCED RELAY/WIRELESS/ANTENNA TECHNOLOGIES	206	392	736

FY 2005 Accomplishments:

In support of Allied Interoperability, Secure 802.11 and related wireless networking technologies were evaluated in FY 05 for operational use in the maritime environment. Advanced directional and phased-array antennas, including beam orientation, steering and control, were also evaluated.

FY 2006 Plans:

Engineering development models will be evaluated in Trident Warrior 06 and in other venues of opportunity.

FY 2007 Plans:

Engineering development models will be evaluated in Trident Warrior 07 and in other venues of opportunity.

	FY 2005	FY 2006	FY 2007
SUBNET RELAY	517	353	196

FY 2005 Accomplishments:

In support of Allied Interoperability, engineering development models of subnet relay communications were evaluated during Trident Warrior 05 for FORCEnet integration in a maritime coalition environment.

FY 2006 Plans:

A multi-bearer architecture that integrates advanced engineering development models of subnet relay and STANAG 5066 Edition 2 (HF IP) will be evaluated in Trident Warrior 06.

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

FY 2007 Plans:

Venues of opportunity will be exploited to validate and evaluate developed portions of subnet relay configurations through testing, trials, and demonstrations. Transition to Program of Record by 2007.

	FY 2005	FY 2006	FY 2007
SYSTEMS INTEGRATION & INTEROPERABILITY TESTING	452	400	495

FY 2005 Accomplishments:

Conducted/participated in four overall Joint/Navy integration and interoperability tests; facilitated two planning reviews for Joint Test and Evaluations; participated in Joint Users Interoperability Communications Exercise (JUICE) and other joint test events.

FY 2006 Plans:

Conduct/participate in three overall Joint/Navy integration and interoperability tests as available; facilitate one planning review for Joint Test and Evaluations as available; participation in JUICE and other joint test events.

FY 2007 Plans:

Conduct/participate in five overall Joint/Navy integration and interoperability tests as available; facilitate two planning reviews for Joint Test and Evaluations as available; participate in JUICE and other joint test events.

	FY 2005	FY 2006	FY 2007
INTEROPERABILITY VALIDATION	154	135	173

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

FY 2005 Accomplishments:

Used The Reconfigurable Land Based Test Sites (RLBTS) and Over the Horizon Targeting (OTH-T) resources to validate Global Information Grid (GIG) technologies prior to shipboard installation, supported eight NR-KPP Migration Plan Developments and two joint interoperability C4ISR certifications to ensure interoperability requirements between sensors, weapon systems and information systems are met.

FY 2006 Plans:

Using The RLBTS and OTH-T resources to validate GIG technologies prior to shipboard installation, support eight NR-KPP Migration Plan Developments and two joint interoperability C4ISR certifications to ensure interoperability requirements between sensors, weapon systems and information systems are met.

FY 2007 Plans:

Use The Reconfigurable Land Based Test Sites (RLBTS) and OTH-T resources to validate Global Information Grid (GIG) technologies prior to shipboard installation, support ten NR-KPP Migration Plan Developments and four joint interoperability C4ISR certifications to ensure interoperability requirements between sensors, weapon systems and information systems are met.

	FY 2005	FY 2006	FY 2007
TESTING OTH-T SYSTEMS	362	316	406

FY 2005 Accomplishments:

Conducted five developmental, integration, and certification tests, in accordance with OPNAVINST 9410.5, of Over-The-Horizon Targeting and Combat systems. Conducted three developmental and integration test events for GCCS-M4x/COE/COE-M/CAS/ATWCS/TTWCS. Testing also addressed issues of Fleet essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems.

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

FY 2006 Plans:

Conduct five developmental, integration, and certification tests, in accordance with OPNAVINST 9410.5, of Over-The-Horizon Targeting and Combat systems with tactical data exchanged over Common Operational Picture (COP) Synchronization Tools (CST) networks and other networks; two integration test events for GCCS-M and collaboration technologies within the GIG. Testing will also address issues of Fleet essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems.

FY 2007 Plans:

Conduct five developmental, integration, and certification tests, in accordance with OPNAVINST 9410.5, of Over-The-Horizon Targeting and combat systems with tactical data exchanged over Common Operational Picture (COP) Synchronization Tools (CST) networks and other networks; three integration test events for Joint Command and Control, Combat Decision Systems, and Collaboration technologies within the GIG. Testing to also address issues of Fleet essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems.

C. OTHER PROGRAM FUNDING SUMMARY:

SEW Architecture/Engineering Support program element is related to all Naval C4I related efforts.

D. ACQUISITION STRATEGY:

Not applicable.

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FY 2006/2007 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-3

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

Exhibit R-3 Cost Analysis						Date: Feb 2006						
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA 04						PROJECT NAME AND NUMBER: OTH Targeting 0798						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYS Cost	FY-05 Cost	FY-05 Award Date	FY-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	CostToComp	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	3648	206	Various	398	Various	736	Various	CONT	CONT	
Interoperability Requirements	Various	Various	3266								3266	
T & E Tools Development	Various	Various	429								429	
Systems Int. & Interop. Testing (LBTN)	Various	Various	1724	452	Various	400	Various	495	Various	CONT	CONT	
Interoperability Validation	Various	Various	2004	154	Various	135	Various	173	Various	CONT	CONT	
Joint Interoperability	Various	Various	1174								1174	
Testing OTH-T Systems	Various	Various	1340	362	Various	316	Various	406	Various	CONT	CONT	
Subtotal T&E			13585	1174		1243		1810		0	CONT	
Remarks												
Contractor Engineering Support											0	
Government Engineering Support	Various	Various	3443	517	Various	353	Various	196	Various	CONT	CONT	
Program Management Support	Various	Various	1468								1468	
Travel											0	
Transportation											0	
Subtotal Management			4911	517		353		196		0	5982	
Remarks												
Total Cost			18496	1691		1596		2006		0	CONT	

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

Project & Title	FY 2005 Number Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
2144 SPACE AND ELECTRONIC WARFARE ENGINEERING	10,943	10,146	11,041	11,475	11,718	11,931	12,168

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: OPNAVINST 3050.23 defines the policy to fuse validated/approved C4ISR architectures and interoperability requirements with Joint requirements, milestones and program decisions. C4ISR integrated architectures/requirements are the underpinnings for all C4ISR mission areas and capabilities and, as such, requirements and acquisition processes have been reengineered to use these Integrated Architecture for decisional purposes and strategic planning. Furthermore, Office of the Secretary of Defense (OSD) has defined key programs/efforts (GIG Baseline Extension (BE)), Transformational Satellite (TSAT), Joint Tactical Radio System (JTRS), Network Centric Enterprise Services (NCES), and Information Assurance (IA) that will drive and change the Navy's C4ISR integrated architectures and associated business processes for requirements, budgets and acquisition. To that end, the SEW provides two main functions: 1) Development of C4ISR Integrated Architecture Products and 2) Supporting C4ISR Systems Engineering processes. The integrated architecture products are used to support the Navy's C4ISR budget process by providing the critical core architecture and enabling capabilities to the Warfighter. The C4ISR systems engineering processes provide the construct for assessments to identify capability shortfalls/gaps and for systems engineering to compare/test alternatives in a joint end-to-end environment while identifying associated Navy wide C4ISR implications. This includes Human Systems Integration (HSI) that provides a mission-centered orientation to ensure effective operational employment of fielded capability. As joint concepts and OSD driving efforts/programs are matured/defined the Navy's C4ISR integrated architectures are refined and the supporting C4ISR Systems Engineering processes work to engineer and enact C4ISR implementations Navy wide across all C4ISR mission areas.

Products provided:

1) C4ISR Integrated Architectures

-Integrated Architectures and Standards - Architecture Views (Operational Views, Service Views, Technical Views, System Views etc.)

-Migration Roadmaps to the target Architectures.

-Architecture technical studies, interpretation assistance, and white papers.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

2) Supporting C4ISR Systems Engineering processes

- C4ISR Requirements Assessments - Gaps Analysis, Overlap Analysis, System Priority Lists, C4ISR Metrics and Models, Analysis of Alternatives, Requirements Database, Assessment Repository, Resource Implications Studies, Baseline Performance Models, Mission Task Analysis, Human Systems Integration (HSI) assessments.
- End-to-End Systems Engineering and Integrated Design - Operational feasibility studies, technical feasibility studies, technical roadmap engineering validations, Architectures and Assessment traceability matrices.
- Joint and Coalition interoperability trials - Joint end-to-end prototyping trials, and Joint/Coalition interoperability demonstrations, Interoperability assessments and metrics, Interoperability studies via the Coalition Warrior Interoperability Demonstration (CWID) and the Joint Rapid Architecture Experimentation (JRAE) Process.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
COALITION WARRIOR INTEROPERABILITY DEMONSTRATION (CWID)	1,914	2,341	2,763

FY 2005 Accomplishments:

JWID was renamed CWID, changing "Joint" to "Coalition." Commander, Joint Forces Command (JFCOM) has assumed management oversight of CWID. NORTHCOM continued as host COCOM and desired to increase the Home Land Security/Defense (HLS/D) and Defense Service to Civil Authorities (DSCA) emphasis inviting even more non-DoD participants. As the sole San Diego site, SPAWAR assumed responsibility for running critical port/border protection scenarios and trial series. SPAWAR chose 28 technologies for its site. Funds in excess of the \$1.7 million passed to the Joint Management Office (JMO), paid for general/program expenses, which included coalition interoperability trials and US and national domestic agency interoperability trials. Additional funds were required to run the SPAWAR site. All trials are based on published Federal Business Opportunity issues, delineated in the JMO letter Ser. No. CWID2005 dated 05 MAY 2004.

FY 2006 Plans:

Commander, European Command (EUCOM) has been selected as the host COCOM for CWID 06. The emphasis will be on advanced Coalition interoperability, with CWID continuing to focus on DSCA and HLD/HLS as well. Again, \$1.7 million exercise "buy-in" is required for CWID participation. In addition, \$548K will support the US Navy site

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

in San Diego, which will fund coalition and US trials based on the annually published Federal Business Opportunity letter POSTED ON 03 May 2005. CWID trials will provide the Fleet with three separate evaluations: 1) evaluation will be provided by the National Security Agency (NSA) for proper security procedures; 2) evaluation will be provided by Joint Integrated Test Command (JITC) for technical issues; and 3) evaluation will be provided by the warfighter to verify usability. These evaluations will then be used to determine whether these projects become program of records.

FY 2007 Plans:

Commander, European Command (EUCOM) will continue as the host COCOM for CWID 07, investigating Coalition interoperability. \$1.7 million exercise "buy-in" is required for CWID participation. \$565K supports the US Navy site in San Diego, which will fund coalition and US trials based on the CWID Federal Business Opportunity letter that will be published in/around May 2006. Remaining funding allows for additional US trials. CWID trials provide the Fleet with three separate evaluations: 1) evaluation provided by NSA for proper security procedures; 2) evaluation will be provided by JITC for technical issues; and 3) evaluation will be provided by warfighter to verify usability. These evaluations will then be used to determine whether these projects become program of records.

	FY 2005	FY 2006	FY 2007
JRAE	4,076	1,000	4,242

FY 2005 Accomplishments:

The Joint RAPTOR efforts were driven by JFCOM interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM JBMC2 effort. The JRAE process (via the Joint RAPTOR events) was used to prototype the joint integrated architectures, and collaboratively tested with the Army and the Air Force promoting joint interoperability between the services next generation tactical C4ISR architectures. Completed two Major Joint RAPTOR interoperability events which examined interoperable Service Oriented Architectures and Service transition to the GIG environment. Completed the Joint RAPTOR Interoperability Trial Plans, Data Collection and Metrics. The Joint RAPTOR Final Report will be written mid-summer of FY05, with the Joint Military Utility Assessment being conducted in late FY05.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

FY 2006 Plans:

Leverage the Joint RAPTOR efforts which will be driven by JFCOM interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM JBMC2 effort. The JRAE process (via the Joint RAPTOR events) will be used to prototype the "to be" joint integrated architectures and integrate and collaboratively test with the Army and the Air Force to promote joint interoperability between the services next generation tactical C4ISR architectures.

- Conduct 1 Major Joint RAPTOR interoperability event
- Joint RAPTOR Interoperability Trial Plans
- Joint RAPTOR Interoperability Data Collection and Analysis
- Joint RAPTOR Interoperability Metrics
- Joint RAPTOR Final Reports

FY 2007 Plans:

Leverage the Joint RAPTOR efforts, which will be driven by JFCOM interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM JBMC2 effort. The JRAE process (via the Joint RAPTOR events) will be used to prototype the "to be" joint integrated architectures and integrate and collaboratively test with the Army and the Air Force to promote joint interoperability between the services next generation tactical C4ISR architectures.

- Conduct 2 Major Joint RAPTOR interoperability events
- Joint RAPTOR Interoperability Trial Plans
- Joint RAPTOR Interoperability Data Collection and Analysis
- Joint RAPTOR Interoperability Metrics
- Joint RAPTOR Final Reports

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
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DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

	FY 2005	FY 2006	FY 2007
C4ISR REQUIREMENTS ASSESSMENTS	1,387	2,042	1,170

FY 2005 Accomplishments:

Used Modeling and Simulation tools to support the Naval Capabilities Development Process (NCDP). Performed requirements analysis, collected and developed model architectures for the Campaign Analysis Modeling and Simulation effort, and conducted assessments of capabilities; and associated systems. Completed analytical studies identified by OPNAV, NETWARCOM, PEO C41 and SPAWAR.

2014-2020 Model C4ISR architectures for 3 Major Combat Operations and specific assessments for 5 POM08 analytic issues in support of the Integrated Strategic Capabilities Plan (ISCP). This work was aligned/integrated with the FORCENet Implementation Process (FIP) to support the Sponsor Program Proposal (SPP).

FY 2006 Plans:

2014-2020 Model C4ISR architectures for 4 Major Combat Operations in support of force level assessments for 5 Navy analytic issues.

FY 2007 Plans:

2016-2022 Model C4ISR architectures for 3 Major Combat Operations in support of force level assessments for 5 Navy analytic issues.

	FY 2005	FY 2006	FY 2007
C4ISR ARCHITECTURE AND STANDARDS	2,427	3,334	1,978

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DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

FY 2005 Accomplishments:

Architecture efforts developed an initial target architecture that supported a migration strategy moving Navy PORs from their current platform/stovepipe domain to a future joint net-centric domain. This resulted in collaboration efforts among Navy FORCENet, Air Force C2 Constellation, Coast Guard Deepwater and Army Enterprise Architectures. These products provided for the net-centric C4ISR transformation of the next generation of warfare platforms and systems.

- FORCENet Integrated Architecture governance structure fully vetted and approved architecture products and policies.
- Produced initial operational architecture products for the war-fighting domain.
- Developed techniques for describing the target FORCENet enterprise level service-oriented architecture.
- Produced system architecture products in support of the NCDP.
- Created white papers and studies aiding in the development of architecture products.

FY 2006 Plans:

The FY06 efforts will build upon the FY05 efforts and extend the scope of the work to include the non-war fighting domain. Architecture efforts will expand a target architecture that will support a migration strategy to move Navy PORs from their current platform/stovepipe domain to a future joint network-centric domain. This will be accomplished by aligning fleet and joint requirements and establishing common engineering standards that facilitate common operational mission threads, and architecture that creates interoperational C4ISR and enterprise business systems across the US services. This will include collaboration efforts of Navy FORCENet, Air Force C2 Constellation, Coast Guard Deepwater and the Army Enterprise Architecture. These products will provide for the C4ISR transformation of the next generation of warfare platforms and systems. .

- Refine FORCENet Integrated Architecture governance structure to incorporate architecture products and policies from other Naval Power 21 domains.
- Produce refined operational architecture products for the non-war-fighting domain.
- Produce initial service architecture products for the war-fighting domain.
- Produce system architecture products as required in support of the NCDP.
- Produce initial Migration Roadmaps to the target architecture.
- Provide various white papers and studies as needed to develop architecture products.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

FY 2007 Plans:

The FY07 efforts will build upon the FY06 efforts and extend the scope of the work to expand the architecture in all areas. Architecture efforts will expand a target architecture that will support a migration strategy to move Navy PORs from their current platform/stovepipe domain to a future joint network-centric domain. This will be accomplished by aligning fleet and joint requirements and establishing common engineering standards that facilitate common operational mission threads, and architecture that creates interoperational C4ISR and enterprise business systems across the US services. This will include the collaboration efforts of Navy FORCENet, Air Force C2 Constellation, Coast Guard Deepwater and the Army Enterprise Architecture. These products will provide for the Net-Centric Operational Warfare (NCOW) transformation of the next generation of warfare platforms and systems.

- Refine FORCENet Integrated Architecture governance structure to incorporate architecture products and policies from other Naval Power 21 domains.
- Produce refined operational architecture products for the war-fighting and non-war-fighting domains.
- Produce initial service architecture products for the non-war-fighting domain.
- Produce system architecture products as required in support of programming decisions.
- Refine Migration Roadmaps to the target architecture.
- Provide various white papers and studies as needed to develop architecture products.

	FY 2005	FY 2006	FY 2007
END-TO-END SYSTEM ENGINEERING AND INTEGRATED DESIGN	1,139	1,429	888

FY 2005 Accomplishments:

Provided systems engineering support for Program Executive Officer (PEOs) to produce near-term integrated architecture and roadmaps in various warfare areas.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

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PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

FY 2006 Plans:

Provide systems engineering support for PEOs to integrate architecture and roadmap capabilities across warfare areas.

FY 2007 Plans:

Provide systems engineering support to apply end-to-end integrated architectures across the Naval Enterprise.

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-3

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

Exhibit R-3 Cost Analysis										Date: Feb 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N					PROGRAM ELEMENT 0604707N					PROJECT NAME AND NUMBER: SEW ENGINEERING 2144		
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-05 Cost	FY-05 Award Date	FY-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
Primary Hardware Development											0	
Ancillary Hardware Development											0	
Systems Engineering											0	
Licenses											0	
Tooling											0	
GFE											0	
Award Fees											0	
Subtotal Product Development			0	0		0		0		0	0	
Remarks												
Development Support	Various	Various	4554								4554	
SEW/C4I Technology Integration	Various	Various	12985								12985	
Systems A&E and Validation	Various	Various	13188								13188	
C4ISR Requirements Assessments	Various	Various	6823	1387	Various	2042	Various	1170	Various	CONT	CONT	
C4ISR Architecture and Standards	Various	Various	5229	2427	Various	3334	Various	1978	Various	CONT	CONT	
End-to-End System Engineering and Integrated Design	Various	Various	6610	1139	Various	1429	Various	888	Various	CONT	CONT	
Info. Repository/Naval Architecture	Various	Various	4000								4000	
Navy Collaborative	Various	Various										
Subtotal Support			53389	4953		6805		4036			CONT	
Remarks												

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
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DATE: Feb 2006

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PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ENGINEERING

Exhibit R-3 Cost Analysis (page 2)									Date: Feb 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER: SEW ENGINEERING 2144			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY-05 Cost	FY-05 Award Date	FY-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
SEW Eng/JWID	Various	Various	17280	1914	Various	2341	Various	2763	Various	CONT	CONT	CONT
SEW Eng/JRAE	Various	Various	8416	4076	Various	1000	Various	4242	Various	CONT	CONT	CONT
Subtotal T&E			25696	5990		3341		7005			44844	CONT
Remarks												
Contractor Engineering Support											0	
Government Engineering Support											0	
Program Management Support											0	
Travel											0	
Transportation											0	
Subtotal Management			0	0		0		0		0	0	
Remarks												
Total Cost			79085	10943		10146		11041		0	CONT	

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

Project & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
2357 MARITIME BATTLE CENTER	12,570	23,482	30,862	37,875	44,074	54,315	54,348

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the MBC is to execute the Naval Warfare Innovation Process. The process takes concepts developed by the Strategic Studies Group and approved by the Chief of Naval Operations into Fleet Battle Experiments (FBE); conducts preliminary sub-scale experiments and technological demonstrations focused on the advanced engineering and operational system development of systems related to all conflict levels of Littoral Battlespace. The MBC environment is a network centric environment that links the existing "core" Naval facilities to the Marine Corps Warfighting Lab (MCWL), the Joint Battle Center/Federated Battle Lab, and technologists in industry and academia. The MBC is essential to the evolution of combat capabilities since it is the engine for validating the new network centric warfare techniques in conjunction with the Sea Based Battle Laboratories (SBBL), Science & Technology (S&T) initiatives and other initiatives that originate with the operating forces. The MBC supports the early and sustained involvement of Joint Warfighters in refining the technology to meet the tactics, techniques, and procedures needed for 2010-2020 Littoral Battlespace. The MBC will have multiple roles since it is a crosscutting organization involved in several facets of concept, platform, weapons, weapon systems and Information Technologies (IT), Information System (IS) and Information Management (IM) systems development and integration. These include collaborative planning, operational experimentation planning and execution, technology transition/acquisition support, systems engineering and integration, technology assimilation and operational demonstrations.

This program historically does not meet established execution benchmarks. MBC experimentation is unique to other programs because it based on Fleet operational availability vice independently scheduled through warfighting labs. Because Fleet experimentation frequently must occur during spring/summer operational schedules, the overall RDT&E obligation/expenditure rates do not align with OSD practice.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2005	FY 2006	FY 2007
FBE ANALYSIS AND CORE SUPPORT	12,570	23,482	30,862

In POM06, the Navy funded increases to SEA TRIAL and NWDC as a commitment to SEA POWER 21 transformation. NWDC, at the direction of Commander Fleet Forces Command (CFFC), will provide the SEA TRIAL Executive Steering Group (STESG) a cross pillar consolidated experimentation plan that recommends funding specific experiments that are keyed to Fleet priorities, the Concept Development and Experimentation Plan (CD&E Plan) and the N6/N7 Mission Capability Package (MCP) gaps.

FY 2005 Accomplishments:

- Completed the Maritime Command and Control Limited Objective Experiment Series
- Completed the Anti-Submarine Warfare Limited Objective Experiment
- Completed the Digital Time Sensitive Strike Limited Objective Experiment
- Completed Rail Gun Concepts of Operations for experimentation
- Completed the Information Management Toolset Limited Objective Experiment
- Completed the Cross Domain Solution Limited Objective Experiment Series
- Completed the Agent Based Computing Limited Objective Experiment
- Completed the Unified Quest 05 War Game
- Participated in Joint Forces Command, (JFCOM) experimentation continuum
- Executed Sea Trial Experiments, War Games, and Seminars

FY 2006 Plans:

- Continue participation in JFCOM experimentation continuum
- Continue Limited Objective Experiments
- Continue CONOPS Development Experiments
- Execute Sea Trial Experiments, War Games, and Seminars

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-2a

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

FY 2007 Plans:

- Continue participation in JFCOM experimentation continuum
- Continue Limited Objective Experiments
- Continue CONOPS Development Experiments
- Execute Sea Trial Experiments, War Games, and Seminars

C. OTHER PROGRAM FUNDING SUMMARY:

Not applicable.

D. ACQUISITION STRATEGY:

Not applicable.

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FY 2006 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET
Exhibit R-3

DATE: Feb 2006

BA: 04

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

Exhibit R-3 Cost Analysis (page 1)										Date: Feb 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N				PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER: Maritime Battle Center 2357		
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYS Cost	FY-05 Cost	FY-05 Award Date	FY-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	Cost To Comp	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	97122	10900	Various	19020	Various	24998	Various	CONT	CONT	CONT
Subtotal T&E			97122	10900		19020		24998		CONT	CONT	CONT
Remarks												
Program Management	Various	Various	21618	1670	Various	4462	Various	5864	Various	CONT	CONT	CONT
Subtotal Management			21618	1670		4462		5864		CONT	CONT	CONT
Remarks												
Total Cost			118740	12570		23482		30862		CONT	CONT	CONT

CLASSIFICATION:							
EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4				R-1 ITEM NOMENCLATURE 0604787N - Joint Warfare Transformation Programs			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	21.717	23.032	0.000	0.000	0.000	0.000	0.000
3021 - Joint Warfare Transformation Program	21.717	23.032	0.000	0.000	0.000	0.000	0.000

Quantity of RDT&E Articles

In accordance with the FY 05 National Defense Authorization Act, RDT&E funding for Joint Forces Command transfers from Navy to Defense-Wide beginning in FY 07. The new program element for 0604787N is 0604XXD under BA 4.

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

The Joint Systems Integration Command (JSIC) is the U.S. Joint Forces Command (USJFCOM) and Chairman, Joint Chiefs of Staff (CJCS) capability for warfighter exploration, prototyping, and evaluation of C2 and C4ISR capabilities. The Command provides the Combatant Commands, at the Joint Force Headquarters level, with a laboratory and assessment environment for the warfighter and technologist. This provides near-term joint operational capabilities and, within a Joint Command and Control (JC2) environment with the Interoperability Technology Demonstration Center (ITDC), demonstrates the joint operational, systems of systems, technical, software, and procedural interoperability of new systems and programs prior to further progress within the acquisition system. JSIC serves as the technical analysis and assessment activity for the Joint Requirement Oversight Council (JROC) capability driven requirements by determining system "value-added" PRIOR to introduction to the Combatant Commanders and in advance of system fielding in operational environments. JSIC also provides a joint interoperability compliance activity for the milestone decision authorities/program managers, e.g., Joint Battle Management Command and Control (JBMC2) Board of Directors, that ensures that selected acquisition systems and programs are fully interoperable PRIOR to being fielded. The intent is for the JSIC to be a forcing function for interoperable joint solutions and a means to foster rapid, near-term insertion of C4ISR technology by promoting the ability to meet the DoD direction for spiral development and evolutionary acquisition. The mission assignment of the JSIC is to provide for the fielding of warfighter C2 systems through rapid systems prototyping and technical and operational evaluations using laboratory environments and field venues joining the technologists and the operational warfighter to meet the validated needs.

(U) JUSTIFICATION FOR BUDGET ACTIVITY:

The Joint Systems Integration Command (JSIC) is the U. S. Joint Forces Command's (JFCOM) facility for warfighter exploration and assessment of C4ISR capabilities. The mission of the JSIC is to prototype and to operationally assess current and emerging technology to address the joint warfighters' needs. The Command provides the Combatant Commands with near-term solutions that address C4ISR problems at the Joint Force Headquarters level.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4		R-1 ITEM NOMENCLATURE 0604787N - Joint Warfare Transformation Programs		
(U) C. PROGRAM CHANGE SUMMARY:				
(U) Funding:		FY 2005	FY 2006	FY07
FY 06 President's Budget		22.239	23.385	20.755
FY 07 President's Budget		21.717	23.032	-20.755
Total Adjustments		-0.522	0.353	-20.755
Summary of Adjustments				
Issue 60070, Small Business Innovation Research (SBIR)		-0.509		
Issue 74501, Department of Energy Transfer		-0.017		
Issue 60173, Nuclear Physical Security (OSD-09)		0.004		
SEC. 8026(F) Federally Funded R&D Centers			0.002	
SEC. 8125 Revised Economic Assumptions			0.106	
Congressional Reduction			0.245	
Congressionally Directed Transfer of JFCOM to Defense Wide				-20.755
Subtotal		-0.522	0.353	-20.755
 (U) Schedule:				
Not Applicable				
 (U) Technical:				
Not Applicable				

R-1 SHOPPING LIST - Item No.83

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4		R-1 ITEM NOMENCLATURE 0604787N - Joint Warfare Transformation Programs						
<p>(U) D. OTHER PROGRAM FUNDING SUMMARY:</p> <table border="0"> <thead> <tr> <th><u>Line Item No. & Name</u></th> <th><u>FY 2005</u></th> <th><u>FY 2006</u></th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) E. ACQUISITION STRATEGY:</p> <p>FY 2005. The JSIC had a major contract for its RDT&E efforts. Equipment required to support the various projects were either bought from other service contracts and/or from the GSA schedule. Services were provided by other services and/or various vendors with expertise on a specific assessment JSIC is accomplishing.</p> <p>(U) F. MAJOR PERFORMERS:</p> <p>FY 2005 . General Dynamics, Suffolk, VA: The contractor furnished technology support services. Award Date: 1 Jan 05</p> <p>(U) G. PERFORMANCE METRICS:</p>			<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	Not Applicable		
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>						
Not Applicable								

R-1 SHOPPING LIST - Item No. 83

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604787N - Joint Warfare Transformation Programs	PROJECT NUMBER AND NAME 3021 - Joint Warfare Transformation Program

(U) B. Accomplishments/Planned Program

	FY 05	FY 06		
Interoperability Technology Demonstration Center (ITDC)	13.500	14.100		
RDT&E Articles Quantity				

FY05 Accomplished:

Demonstrated the five categories of operational, systems of systems, technical, software, and procedural interoperability of selected new programs or systems prior to further progress within the acquisition system. The Center provided interoperability demonstrations of selected (configuration controlled) early capability implementations in coordination with the milestone decision authorities and joint program office. Demonstrations of early implementations lead to early identification of interoperability issues and allow for earlier fielding of interoperable joint capabilities.

FY06 Plan:

Continue to demonstrate the five categories of operational, systems of systems, technical, software, and procedural interoperability of selected new programs or systems prior to further progress within the acquisition system. The Center will provide interoperability demonstrations of selected (configuration controlled) early capability implementations in coordination with the milestone decision authorities and joint program office. Demonstrations of early implementations will lead to early identification of interoperability issues and allow for earlier fielding of interoperable joint capabilities.

	FY 05	FY 06		
Advanced Systems Prototyping	2.722	3.016		
RDT&E Articles Quantity				

FY05 Accomplishments:

Built, tested, and delivered operational prototypes that solve near-term capability gaps identified by one of several possible sources. Advanced Systems Prototyping used organic laboratory resources, equipment, and technical personnel to perform these functions integrating external providers' technologies as necessary.

FY06 Plan:

Continue to build, test, and deliver operational prototypes that solve near-term capability gaps identified by one of several possible sources. Advanced Systems Prototyping will use organic laboratory resources, equipment, and technical personnel to perform these functions integrating external providers' technologies as necessary. -

	FY 05	FY 06		
CCs Requirements Analysis and Capability Assessments	2.732	3.016		
RDT&E Articles Quantity				

FY05 Accomplishments:

Analyzed near-term requirements from all Combatant Commanders, identified current emerging or mature technology available to address these requirements, perform comprehensive assessment for joint maturity, and warfighter utility. JSIC projects were nominated to meet Combatant Commanders and Joint Force transformational requirements for the fiscal year. Those submitted to the Joint Staff for approval subsequently became the approved fiscal year program.

FY06 Plan:

Continue to analyze near-term requirements from all Combatant Commanders, identify current emerging or mature technology available to address these requirements, perform comprehensive assessment for joint maturity, and warfighter utility. JSIC projects are nominated to meet Combatant Commanders and Joint Force transformational requirements for the fiscal year. Those submitted to the Joint Staff for approval subsequently become the approved fiscal year program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604787N - Joint Warfare Transformation Programs	PROJECT NUMBER AND NAME 3021 - Joint Warfare Transformation Program	
(U) B. Accomplishments/Planned Program			
DOTMLP-F Transformation Change Package (TCP) Recommendations RDT&E Articles Quantity	FY 05 0.508	FY 06 0.553	
<p>FY05 Accomplishments: Provided Doctrine, Organizational, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) recommendations on fielding strategies for USJFCOM and Joint Requirement Oversight Council (JROC) endorsement. Recommendations were based on results from technology assessments, which address the military utility of proposed solutions and identify relevant Service programs, doctrinal impacts, training implications, personnel requirements, etc.</p> <p>FY06 Plan: Continue to provide Doctrine, Organizational, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) recommendations on fielding strategies for USJFCOM and Joint Requirement Oversight Council (JROC) endorsement. Recommendations are based on results from technology assessments, which address the military utility of proposed solutions and identify relevant Service programs, doctrinal impacts, training implications, personnel requirements, etc.</p>			
Joint Concept Development and Experimentation Support RDT&E Articles Quantity	FY 05 0.511	FY 06 0.554	
<p>FY05 Accomplishments: Provided support for Limited Objective Experiments and Multi-national experimentation efforts. Continued experimentation and prototyping laboratory support for Standing Joint Force Headquarters, Joint National Training Capability and Joint Experimentation events.</p> <p>FY06 Plan: Continue to provide support for Limited Objective Experiments and Multi-national experimentation efforts. Continue experimentation and prototyping laboratory support for Standing Joint Force Headquarters, Joint National Training Capability and Joint Experimentation events.</p>			
Federated Joint C2 Laboratories (FJC2L) RDT&E Articles Quantity	FY 05 1.744	FY 06 1.793	
<p>FY05 Accomplishments: The Federated Joint C2 Laboratories (FJC2L) is a voluntary consortium of the JSIC, the Service Battle Centers/Laboratories, Combatant Commanders, Agencies and other DoD organizations formed to promote near-term Joint C4ISR solutions to Joint Force Headquarters operational needs/issues. The JSIC, as the overseer of the consortium, continued to provide annual support to these efforts through project experimentation, prototyping, and assessment for joint solutions.</p> <p>FY06 Plan: The Federated Joint C2 Laboratories (FJC2L) is a voluntary consortium of the JSIC, the Service Battle Centers/Laboratories, Combatant Commanders, Agencies and other DoD organizations formed to promote near-term Joint C4ISR solutions to Joint Force Headquarters operational needs/issues. The JSIC, as the overseer of the consortium, will continue to provide annual support to these efforts through project experimentation, prototyping, and assessment for joint solutions.</p>			

CLASSIFICATION:										
Exhibit R-3 Cost Analysis (page 1)										DATE:
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0604787N - Joint Warfare Transformation Programs				PROJECT NUMBER AND NAME 3021 - Joint Warfare Transformation Program			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date			
Dev Support Equip Acquisition	MIPR	General Service Administration		2.986	Various	4.141	Various			
Systems Engineering	C-CPFF	Old Dominion University		0.098	10/04	0.094	10/05			
Contractor Engineering Support	C-CPFF	Georgia Tech Research Institute		0.924	10/04	0.788	10/05			
Gov't Engineering Support	C-CPFF	General Dynamics		3.322	01/05	3.177	01/06			
Systems Engineering	C-CPFF	South Carolina Research		0.219	10/04	0.361	10/05			
Gov't Engineering Support	MIPR	Various DoD		0.623	Various	0.673	Various			
Travel		Various DoD		0.040	Various	0.046	Various			
Subtotal Product Development			0.000	8.212		9.280				
Remarks:										
Systems Engineering Support	C-CPFF	Old Dominion University		0.080	10/04	0.079	10/05			
Contractor Engineering Support	C-CPFF	General Dynamics		3.529	01/05	3.295	01/06			
Gov't Engineering Support	MIPR	Various DoD		1.367	Various	1.335	Various			
Travel		Various DoD		0.030	Various	0.035	Various			
Subtotal Support			0.000	5.006		4.744				
Remarks:										

CLASSIFICATION:											
Exhibit R-3 Cost Analysis (page 2)										DATE:	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0604787N - Joint Warfare Transformation Programs				PROJECT NUMBER AND NAME 3021 - Joint Warfare Transformation Program				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date				
Dev Support Equip Acquisition	MIPR	General Service Administration		2.649	Various	3.091	Various				
Systems Engineering	C-CPFF	Old Dominion University		0.109	10/04	0.109	10/05				
Contractor Engineering Support	C-CPFF	General Dynamics		3.862	01/05	3.647	01/06				
Systems Engineering	C-CPFF	South Carolina Research		0.511	10/04	0.616	10/05				
Gov't Engineering Support	MIPR	Various DoD		1.288	Various	1.436	Various				
Travel		Various DoD		0.080	Various	0.109	Various				
Subtotal T&E			0.000	8.499		9.008					
Remarks:											
Contractor Engineering Support											
Government Engineering Support											
Program Management Support											
Travel											
Subtotal Management			0.000	0.000		0.000					
Remarks:											
Total Cost			0.000	21.717		23.032					
Remarks:											