DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2008/2009
BUDGET ESTIMATES

JUSTIFICATION OF ESTIMATES
FEBRUARY 2007

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

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, $18,673,894,000, 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.

"In accordance with the President's Management Agenda, Budget and Performance Integration initiative, this program has been assessed using the Program Assessment Rating Tool (PART). Remarks regarding program performance and plans for performance improvement can be located at the Expectmore.gov website."

DEPARTMENT OF DEFENSE

FY 2008 RDT&E PROGRAM

SUMMARY
($ IN THOUSANDS)

19 JAN 2007

APPROPRIATION	FY 2006	FY 2007	FY 2008
Research, Development, Test & Eval, Navy	18,970,169	18,879,884	17,075,536
Total Research, Development, Test & Evaluation	18,970,169	18,879,884	17,075,536

DEPARTMENT OF DEFENSE

FY 2008 RDT&E PROGRAM

SUMMARY
($ IN THOUSANDS)

19 JAN 2007

Summary Recap of Budget Activities	FY 2006	FY 2007	FY 2008
Basic Research	466,944	491,706	467,245
Applied Research	761,874	785,901	677,543
Advanced Technology Development	1,011,713	768,086	521,829
Advanced Component Development & Prototypes	3,492,736	3,304,919	2,998,086
System Development & Demonstration	8,596,597	8,900,172	7,848,516
RDT&E Management Support	1,138,446	834,566	865,146
Operational Systems Development	3,501,859	3,794,534	3,697,171
Total Research, Development, Test & Evaluation	18,970,169	18,879,884	17,075,536

Summary Recap of FYDP Programs			
Strategic Forces	177,827	208,838	155,187
General Purpose Forces	997,005	924,056	842,341
Intelligence and Communications	1,129,280	1,393,797	1,408,080
Research and Development	16,571,235	16,251,573	14,587,368
Central Supply and Maintenance	73,059	88,870	77,482
Training Medical and Other	17,698	12,750	5,078
Administration and Associated Activities	4,065		
Total Research, Development, Test & Evaluation	18,970,169	18,879,884	17,075,536

DEPARTMENT OF THE NAVY

FY 2008 RDT&E PROGRAM

SUMMARY
($ IN THOUSANDS)

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DEPARTMENT OF THE NAVY
FY 2008 RDT&E PROGRAM

EXHIBIT R-1

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

Date: 19 JAN 2007

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 2006	FY 2007	FY 2008	SEC
27	0603207N	Air/Ocean Tactical Applications	04	30,698	32,654	47,914	U
28	0603216N	Aviation Survivability	04	44,285	29,513	6,252	U
29	0603237N	Deployable Joint Command and Control	04	40,640	16,321	9,475	U
30	0603254N	ASW Systems Development	04	20,545	25,337	16,706	U
31	0603261N	Tactical Airborne Reconnaissance	04	3,882	3,944	4,063	U
32	0603382N	Advanced Combat Systems Technology	04	30,434	12,319	9,331	U
33	0603502N	Surface and Shallow Water Mine Countermeasures	04	148,298	116,124	91,122	U
34	0603506N	Surface Ship Torpedo Defense	04	51,562	57,509	15,967	U

DEPARTMENT OF THE NAVY
FY 2008 RDT&E PROGRAM

EXHIBIT R-1

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

Date: 19 JAN 2007

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 2006	FY 2007	FY 2008	SEC
35	0603512N	Carrier Systems Development	04	165,429	156,248	84,806	U
36	0603513N	Shipboard System Component Development	04	44,476	49,993	9,450	U
37	0603525N	PILOT FISH	04	128,312	133,290	132,131	U
38	0603527N	RETRACT LARCH	04	80,314	86,686	89,601	U
39	0603536N	RETRACT JUNIPER	04	43,420	38,253	37,405	U
40	0603542N	Radiological Control	04	1,809	1,894	1,546	U
41	0603553N	Surface ASW	04	33,006	34,017	25,560	U
42	0603559N	SSGN Conversion	04	23,198	25,855		U
43	0603561N	Advanced Submarine System Development	04	158,115	156,875	134,882	U
44	0603562N	Submarine Tactical Warfare Systems	04	7,013	10,318	9,865	U
45	0603563N	Ship Concept Advanced Design	04	20,844	21,689	30,858	U
46	0603564N	Ship Preliminary Design & Feasibility Studies	04	26,291	25,766	18,736	U
47	0603570N	Advanced Nuclear Power Systems	04	165,971	173,988	166,196	U
48	0603573N	Advanced Surface Machinery Systems	04	4,958	2,789		U
49	0603576N	CHALK EAGLE	04	112,700	138,228	211,201	U
50	0603581N	Littoral Combat Ship (LCS)	04	584,077	329,383	217,502	U
51	0603582N	Combat System Integration	04	74,626	64,088	53,427	U
52	0603609N	Conventional Munitions	04	33,422	23,297	8,941	U
53	0603611M	Marine Corps Assault Vehicles	04	243,945	347,820	288,220	U
54	0603612M	USMC Mine Countermeasures Systems - Adv Dev	04	5,514	3,763	657	U
55	0603635M	Marine Corps Ground Combat/ Support System	04	12,829	12,904	80,403	U

DEPARTMENT OF THE NAVY
FY 2008 RDT&E PROGRAM

EXHIBIT R-1

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

Date: 19 JAN 2007

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 2006	FY 2007	FY 2008	SEC
56	0603654N	Joint Service Explosive Ordnance Development	04	33,924	24,315	83,361	U
57	0603658N	Cooperative Engagement	04	95,824	64,296	33,283	U
58	0603713N	Ocean Engineering Technology Development	04	23,938	17,259	5,122	U
59	0603721N	Environmental Protection	04	26,956	25,972	19,850	U
60	0603724N	Navy Energy Program	04	8,217	1,594	5,335	U
61	0603725N	Facilities Improvement	04	7,134	8,263	4,131	U
62	0603734N	CHALK CORAL	04	42,518	28,470	28,297	U
63	0603739N	Navy Logistic Productivity	04	19,863	24,612	3,547	U
64	0603746N	RETRACT MAPLE	04	309,742	343,504	346,144	U
65	0603748N	LINK PLUMERIA	04	82,741	80,357	88,748	U
66	0603751N	RETRACT ELM	04	53,728	63,891	79,144	U
67	0603755N	Ship Self Defense	04	10,772	8,863	10,954	U
68	0603764N	LINK EVERGREEN	04	56,305	54,658	31,607	U
69	0603787N	Special Processes	04	46,487	46,916	40,940	U
70	0603790N	NATO Research and Development	04	9,912	9,741	9,934	U
71	0603795N	Land Attack Technology	04	73,307	56,257	31,021	U
72	0603851M	Nonlethal Weapons	04	42,591	49,129	45,892	U
73	0603857N	All Service Combat Identification Evaluation Team (ASCIET)	04	15,085			U
74	0603860N	Joint Precision Approach and Landing Systems	04	35,573	33,116	70,811	U
75	0603879N	Single Integrated Air Picture (SIAP) System Engineer (SE)	04	34,574	41,491	46,450	U
76	0603889N	Counterdrug RDT&E Projects	04	32,360	2,192		U

DEPARTMENT OF THE NAVY
FY 2008 RDT&E PROGRAM

EXHIBIT R-1

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

Date: 19 JAN 2007

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 2006	FY 2007	FY 2008	SEC
77	0603925N	Directed Energy and Electric Weapon Systems	04	17,893	27,197		U
78	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	7,789	98,361	27,569	U
79	0604327N	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	6,894	19,924	126,434	U
80	0604450N	Joint Air-to-Ground Missile (JAGM)	04			15,000	U
81	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	35,590	43,676	42,295	U
82	0604787N	Joint Warfare Transformation Programs	04	22,406			U
		Advanced Component Development & Prototypes		3,492,736	3,304,919	2,998,086	

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**				R-1 ITEM NOMENCLATURE PE 0603207N Air/Ocean Tactical Applications				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**30.699**	**32.654**	**47.914**	**36.215**	**41.012**	**34.198**	**31.256**	**30.264**
2341 METOC Data Acquisition	**8.669**	**10.663**	**24.509**	**11.497**	**11.238**	**9.264**	**9.063**	**9.267**
2342 METOC Data Assimilation and Modeling	**9.054**	**10.753**	**14.511**	**17.075**	**21.648**	**17.386**	**14.462**	**13.078**
2343 Tactical METOC Applications	**7.381**	**8.652**	**7.678**	**6.373**	**6.805**	**6.229**	**6.387**	**6.549**
2344 Precise Timing and Astrometry	**1.285**	**1.590**	**1.216**	**1.270**	**1.321**	**1.319**	**1.344**	**1.370**
2345 Littoral Battlespace Sensing, Fusion & Integration								
9999 Congressional Increases	**4.310**	**0.996**						

(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 Network Enterprise Command and Control (NECC) system (formerly called Joint Command and Control (JC2)), 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 starting in FY06 reflect the development of a new ocean and atmospheric sensors, accelerated data fusion and assimilation techniques, and integration of these fused data into Navy and DoD networks in support of the Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) 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.

This budget reflects changes in investment line description beginning in FY07. This change supports acquisition and development investment lines that support the vision, operations concept, and capability requirements. Changes consolidate and better define RDT&E efforts as well as better reflect the new Commander Naval Meteorological and Oceanographic Command (CNMOC) reorganization. The funding in this Program Element supports these investment lines: 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, Geospacial Information and Services (GI&S)); Tactical Decision Aids (TDA) and Mission Planning; Precise Timing, Astrometry and Reference Frames; and Meteorological and Oceanographic (METOC) in the Information Technology (IT) Enterprise Environment.

FY06 includes Congressional Increases for 3 Dimensional Certification of Multibeam Array and Processing System (3D-CMAPS).

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates systems for experimental test related to specific ship or aircraft applications**.**

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4**	R-1 ITEM NOMENCLATURE PE 0603207N Air/Ocean Tactical Applications

(U) B. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2006	FY 2007	FY08	FY09
FY07 Presidents Budget	31.187	31.778	30.895	31.868
FY08 Presidents Budget	30.699	32.654	47.914	36.215
Total Adjustments	(0.488)	0.876	17.019	4.347
Summary of Adjustments				
Program Adjustments		1.000	17.073	4.409
SBIR Tax	(0.416)			
Non-Enterprise related CIVPERS/CS Adjustments			(0.070)	(0.070)
FY 08 / FY 09 NWCF Rate Adj - NUWC				0.007
FY 08 / FY 09 NWCF Rate Adjustments-SPAWAR Sys Ctr			0.139	0.063
FY 08 / FY 09 NWCF Rate Adjustments-NRL			0.077	0.138
CIVPER/CS Adjustment for NETWARCOM Enterprise			(0.200)	(0.200)
Sec. 8106: Revised Economic Assumptions		(0.124)		
Small Business Innovation Research (SBIR) Tax	(0.028)			
Sec 8125 Revised Economic Assumptions	(0.013)			
Congressional Action 1% Reduction	(0.031)			
Subtotal	(0.488)	0.876	17.019	4.347

(U) Schedule:

Not applicable

(U) Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**8.669**	**10.663**	**24.509**	**11.497**	**11.238**	**9.264**	**9.063**	**9.267**
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 (ASW), 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 radiosound, 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 (Commander, Fleet Forces Command) requirements for remote autonomous, clandestine, Littoral Battlespace Sensing (LBS) in support of Sea Shield & Sea Basing.

Funding increases in FY08 and beyond to support development of radar weather using Through-The-Sensor (TTS) techniques and development of ocean glider and Autonomous Undersea Vehicles (AUV), sensors, Tracking and Telemetry, and Mission Planning System (MPS) as part of the Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) Program. These efforts are addressed in the Sensors and Observing Systems (Unmanned Vehicles) and in the Sensors and Observing Systems (Through-the-Sensor) descriptions.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

(U) B. Accomplishments/Planned Program

Acoustic Data Inversion/ Sensors and Observing Systems (Through-the-Sensor)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.462	1.629	4.834	2.633
RDT&E Articles Quantity				

FY06 -Continued development of the Geophysical Acoustic Inversion Toolkit (GAIT) Version 2 algorithms to Ocean Atmosphere Master Library (OAML). Begin development of advanced Precise Underwater Mapping (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 Ocean Atmosphere Master Library (OAML). Begin integration into Fleet Combat Systems. Mature networked data sharing capabilities (from acoustic data inversion). Continue investigation of Precise Underwater Mapping (PUMA) volumetric sound velocity and backscatter inversion techniques. Complete integration of the AQS-20 inversion techniques into the Commander, Naval Meteorological and Oceanographic Command (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 Littoral Battlespace Sensing, Fusion and Integration (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 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).
FY08 - LBSF&I Program: Complete development of the SPS-48E and SPS-48G Radar Obsolescence and Availability (ROAR) Hazardous Weather Detection and Display Capability (HWDDC). Test and demonstrate the HWDDC system. Continue development of the SPY-1 TEP prototype. Complete related studies (communications, databasing, data flow, etc.) and system engineering plans. Complete development of the HWDDC requirements, specifications, and standards for the HWDDC system in preparation for procurement and for use in related JCIDS documentation. Begin development of TEP requirements, specifications, standards and system engineering plans for the TEP system for use in related JCIDS documentation.
Complete integration of GAIT Version 2 algorithms into Fleet Combat Systems, Anti-submarine Warfare (ASW) Tactical Decision Aids (TDAs) and for use aboard Naval Oceanographic Office (NAVOCEANO) assets. Commence development of the GAIT Version 3 algorithms. Engineering studies and preliminary design for a passive seabed classification system to be used aboard submarines, next-generation surface ships and aboard Maritime Patrol & Reconnaissance Aircraft (MPRA.) Continue development of ambient noise assimilation capability aboard submarines. Begin development of advanced geo-acoustic merging algorithms to support inversions. Conduct submarine fathometer (BQN-17) Automated Sediment Classification System (ASCS) validation. METOC Future Capabilities will continue development and test military ACARS and exploit Intelligence Surveillance & Reconnaissance (ISR) sensors for manned & unmanned platforms for environmental information. Continue with use of Naval Special Warfare (NSW), Mine Warfare tactical sensors for Through-the-Sensor (TTS) applications for environmental assessment and characterization. Develop, demonstrate & test TTS concept for undersea warfare systems.
FY09 - LBSF&I Program: Continue development of the SPY-1 TEP prototype. Continue development of TEP requirements, specifications, standards and system engineering plans for the TEP system for using in related JCIDS documentation. Continue development of the GAIT Version 3 algorithms to ASW TDAs. Continue development of a passive seabed classification system. Expand ambient noise assimilation capability to include current and future MPRA platforms like the Multi-Mission Maritime Aircraft (MMA) and future surface combatant platforms like the Littoral Combat Ship (LCS) and the Next Generation Destroyer (DD(X)). Meteorology and Oceanography (METOC) Future Capabilities will continue development and test military ACARS and exploit Intelligence, Surveillance, and Reconnaissance (ISR) sensors for manned & unmanned platforms for environmental information. Continue with use of NSW, Mine Warfare tactical sensors for TTS applications for environmental assessment and characterization. Verify & validate performance of TTS application on undersea systems.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

(U) B. Accomplishments/Planned Program

Autonomous Sensors (AUV/UAV)/ Sensors and Observing Systems (Unmanned Vehicles)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.462	1.993	10.984	1.030
RDT&E Articles Quantity				

FY06 - Delivered, tested and demonstrated prototype micro Autonomous Undersea Vehicle (AUV). Conducted preliminary studies in support of Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) and developed Information Superiority Sensors (ISS) 60 command and control system interface. Conducted undersea vehicle modeling and simulation and engineering studies.
FY07- Deliver/test/demonstrate prototype Sensor Pod on operational Unmanned Aerial Vehicles (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 comman 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.
FY08 - LBSF&I Program: Funding required to develop glider and unmanned underwater vehicle (UUV) prototypes and the planned tracking and telemetry components of the unmanned systems in preparation of milestone C. Sensor integration and validation/ verification tests will be initiated. Continue development of AUV and glider prototypes, including the development and testing of integrated sensors. Complete related studies (communications, databasing, data flow, etc.) and system engineering plans. Continue development of a common Tracking and Telemetry and vehicle mission planning system. Demonstrate the end-to-end system. Develop requirements, specifications, and standards for the AUV, glider, Tracking and Telemetry, and Mission Planning systems in preparation fc procurement and for use in related Joint Capabilities Integration & Development System (JCIDS) documentation.
FY09 - LBSF&I Program: Complete development of end-to-end AUV and glider sensor systems. Correct discrepancies in platforms, sensor operations, tracking and telemetry, and mission planning systems based on lessons learned during FY08 testing and evaluation.

Ambient Noise Data/TDA/Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.462	1.767	3.738	3.499
RDT&E Articles Quantity				

FY06 - Delivered 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 Anti-submarine Warfare (ASW) Combat Systems (specifically the Sonar Tactical Decision Aid Variants and Under Sea Warfare (USW) Decision Support System (DSS)). Development of Network based on DAPS. Add real-time ship tail Ambient Noise (AN) observations to the Shipping Nose (SN) database (from Ambient Noise Data). Continue the development of the next generation AN database modeled after the Global Data Base Variable Resolution (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).
FY08 - Mapping, Charting & Geodesy (MC&G) product analysis and development. Architecture and design of Mission Planning Systems and support elements in support of littoral combat operations. Data analysis and processing development for environmental characterization for Mission Planner & Tactical Decision Aid use. Develop quality control, fusion and product uncertainty tools and techniques to transform data into information to support product development for mission planners and TDA use. Development of techniques and tools to guide adaptive sampling to optimize use of measurement assets. Develop advanced Geospatial Information and Services (GI&S) databases and data processing tools and techniques to support boundary conditions for numerical forecast models Develop advanced data fusion tools and interface modules to ocean and atmospheric data assimilation systems.
FY09 - Continue to develop MC&G products and report result. Develop mission planning tools in support of littoral combat operations. Continue data analysis and processing development for environmental characterization for Mission Planner & Tactical Decision Aid use. Continue development, test and document quality control fusion and product uncertainty tools and techniques to transform data into information to support product development for mission planners and TDA use. Continue development and test techniques and tools to guide adaptive sampling to optimize use of measurement assets. Continue development, test and demonstrate advanced GI&S databases and data processing tools and techniques to support boundary conditions for numerical forecast models. Continue development and test advanced data fusion tools and interface modules to ocean and atmospheric data assimilation systems.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

(U) B. Accomplishments/Planned Program

Autonomous Clandestine Sensors/ Sensors and Observing Systems (Through-the-Sensor)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.462			
RDT&E Articles Quantity				

FY06 - Delivered 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.462	1.482	0.419	1.305
RDT&E Articles Quantity				

FY06 - Delivered TED Services Version 3 prototype.
FY07 - Demonstrate and validate TED Services Version 3 and continue Network Global Information Grid (GIG) compatibility effort (from Data Connectivity).
FY08 - Finalize Naval Integrated Tactical Environmental Subsystem (NITES) Data (formerly known as Tactical Environmental Data (TED) Services) integration efforts and prepare for COMOPTEVFOR operational evaluation (OPEVAL) with Global Command and Control System - Maritime (GCCS-M) 4.1. Begin NITES Data development and test integration efforts with NITES Next Generation (NG).
FY09 - Support NITES NG development and begin concept exploration to migrate toward Network Enterprise Command and Control (NECC) (formerly Joint Command and Control (JC2)).

Acoustic Data Acquisition/ Sensors and Observing Systems (Through-the-Sensor)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.607			
RDT&E Articles Quantity				

FY06 - Delivered Modular Ocean Data Assimilation System-Light (MODAS-L) string data ingest algorithms. Delivered prototype volumetric sound velocity assimilation algorithms. Began development of submarine ambient noise assimilation capability. Continued the development of the next generation Ambient Noise database modeled after the Global Data Base Variable Resolution (GDB-V) database. Continued to develop Tactical Decision Aids (TDA) uncertainty algorithms.
FY07 - Efforts rolled into the Sensors and Observing Systems (Unmanned Vehicles) investment line.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

(U) B. Accomplishments/Planned Program

Digital MC and G Analysis Program (DMAP)/ Tactical Decision Aid and Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.352			
RDT&E Articles Quantity				

FY06 - Delivered Annual Report.
FY07 - Efforts rolled into the TDA and Mission Planning investment line.

Littoral Battlespace Data Acquisition/ Sensors and Observing Systems (In-Situ)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.000	2.392	3.534	3.030
RDT&E Articles Quantity				

FY06 - Developed initial Integrated Littoral Battlespace Data Acquisition Plan. Completed the AQS-20 through the sensor inversion rapid transition process. Conducted AQS-20 end-to-end demonstration. Continued work on the development of automated adaptive survey algorithms. Completed development of the joint National Oceanographic and Atmospheric Administration (NOAA)/USN International Oceanographic Observation System (IOOS). Continued development of an automated sensor placement mission planner. Began 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 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.
FY08 - Develop advanced processing tools to work with insitu data sources to populate environmental database and support forward deployed oceanographic personnel. Continue development work, test and document adaptive hydrographic and seafloor survey work for transition to the unmanned vehicles, small surface craft and T-AGS 60 class ships. Develop micro-miniature oceanographic and atmospheric insitu sensors and systems. Development advanced insitu sensor systems to support very near shore situational awareness in support of mine warfare, Naval Special Warfare (NSW) and Expeditionary Warfare missions.
FY09 - Continue to develop and demonstrate advanced processing tools to work with insitu data sources to populate environmental database and support forward deployed oceanographic personnel. Development and demonstration of advanced insitu sensor systems to support very near shore situational awareness in support of Mine Warfare, NSW and Expeditionary Warfare missions. Continue development, verify and validate performance and document adaptive hydrographic survey work for transition to the unmanned vehicles, small surface craft and T-AGS 60 class ships. Continue the development and demonstration of micro-miniature oceanographic and atmospheric in-situ sensors & systems. Utilize tactical and survey platforms for insitu measurements.

USMC Acquisition	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.400	1.400	1.000	
RDT&E Articles Quantity				

FY06 - Continued development of Marine Corps Meteorological Mobile Facility Replacement (METMF(R)) Next Generation (NG) Variant I Engineering Development Model (EDM), Variant II prototype.
FY07 - Conduct METMF(R) NG software, hardware, radar, and communications upgrades. Deliver Variant I EDM and Variant II prototype.
FY08 - Conduct operational testing of METMF (R) NG prototypes and prepare for delivery.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not Applicable

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.

(U) D. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the 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).

(U) E. MAJOR PERFORMERS:

Not applicable

(U) F. METRICS:

Earned Value Management (EVM) is used for metrics reporting and risk management.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2341 METOC Data Acquisition						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	30.720	5.507	N/A	8.750	N/A	5.413	N/A	CONT	CONT	
	WX	NAWC-AD Lake	0.923		N/A	0.850	N/A		N/A	CONT	CONT	
	CP	ARL/APL	5.294	0.437	N/A	0.750	N/A	0.450	N/A	CONT	CONT	
	WX	NSWC	2.992	0.305	N/A	0.675	N/A	0.400	N/A	CONT	CONT	
	CP	New Age	4.008	0.807	N/A	0.850	N/A	0.850	N/A	CONT	CONT	
	CP	PSI/R.L. Phillips	2.605	0.548	N/A	0.650	N/A	0.500	N/A	CONT	CONT	
	CP	Neptune	2.255	0.436	N/A	0.191	N/A		N/A	CONT	CONT	
	WX	FNMOC	1.661		N/A		N/A		N/A	CONT	CONT	
	N/A	MISC	13.784	1.268	N/A	5.573	N/A		N/A	CONT	CONT	
	CP	Smiths Detection	0.733	1.356	N/A		N/A		N/A	CONT	CONT	
	CP	TBD				5.820		3.684				
Subtotal Software Development			64.975	10.663		24.109		11.297		CONT	CONT	

Remarks:

Systems Engineering	CP	SSA/CSC	2.060	0.000	N/A		N/A		N/A	CONT	CONT	
Subtotal Support			2.060	0.000		0.000		0.000		CONT	CONT	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: 2341 METOC Data Acquisition

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	PD	OPTEVFOR	0.140		N/A		N/A		N/A	CONT	CONT	
		JITC				0.400		0.200				
Subtotal Software Development			0.140	0.000		0.400		0.200		CONT	CONT	

Remarks: Testing supports delivery of the Marine Corps Meteorological Mobile Facility Replacement (METMF(R)) Next Generation (NG) prototypes.

Subtotal Support			0.000	0.000		0.000		0.000		CONT	CONT	

Remarks:

Total Cost			49.880	10.663		24.509		11.497		CONT	CONT	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	2341 METOC Data Acquisition	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Autonomous Sensors (AUV/UAV) Sensors/Obs Sys (UVs)	AUV/Glider Studies																															
Acoustic Data Inversion/ Sensors/Obs Sys (TTS)	GAIT Ver PUMA																															
Ambient Noise Data/ TDA/Mission Planning	SN Database OAML PUMA OAML																															
Autonomous Clandestine Sensors/ Sensors/Obs Sys (TTS)	TED Services Int																															
Data Connectivity/ METOC in the IT Enterprise	TED Services V3.0																															
Acoustic Data Acquisition/ Sensors/Obs Sys (TTS)	MODAS SubCTD Uncertainty AN Database																															
DMAP/TDA/Mission Planning	Navy Unique																															
Littoral Battlespace Sensing/ Sensors/Obs Sys (In-Situ)	AQS20/SPS48E																															
USMC Acquisition	1 V1 EDM 1 V2 EDM 1 V2 Prototype 1 V3					2 V1 4 V2 3 V3				2 V1 4 V2			Development Test				OP Test															

CLASSIFICATION:

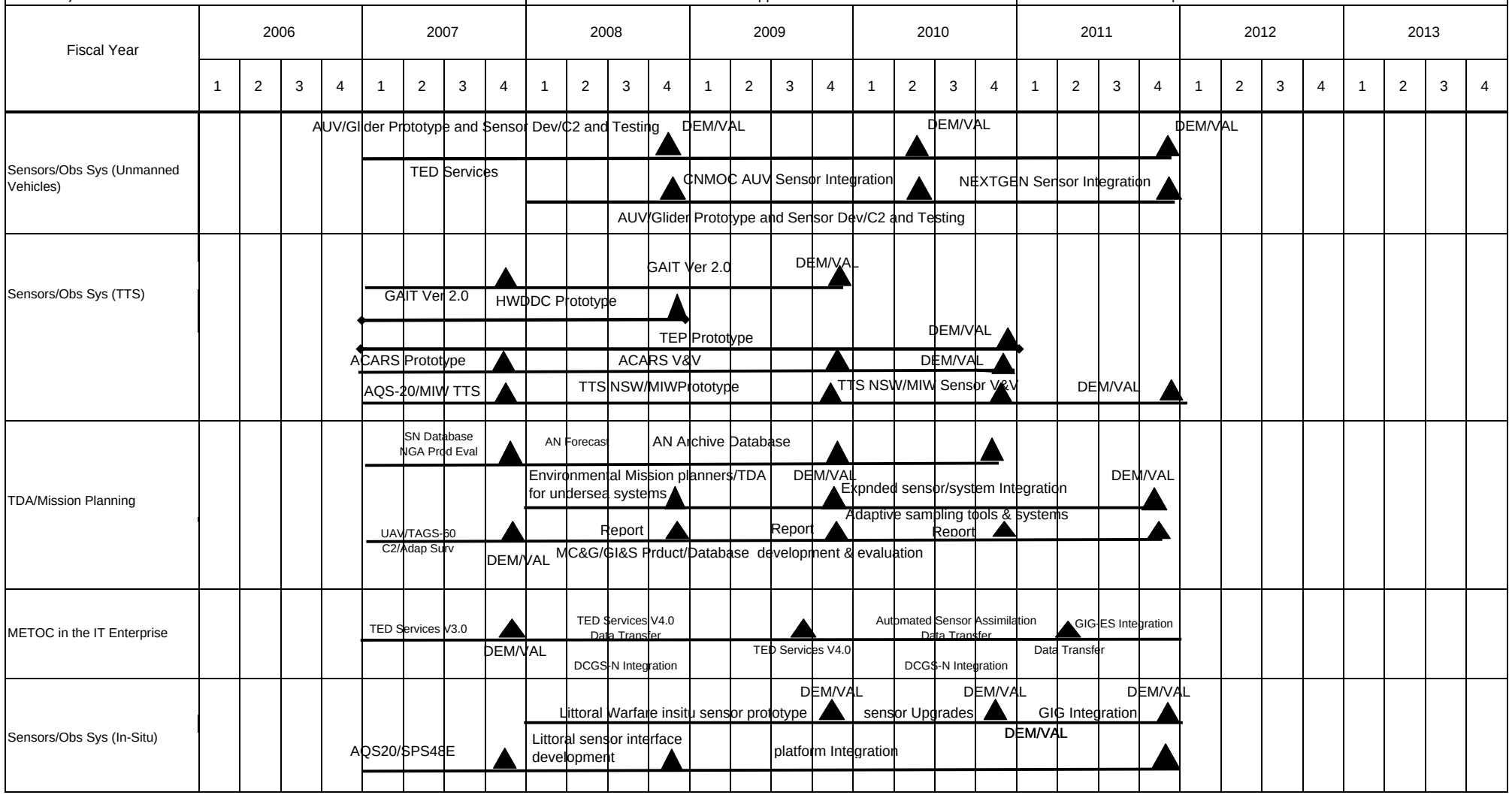
EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME 2341 METOC Data Acquisition			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Autonomous Sensors (AUV/UAV)/Sensors/Obs Sys (UVs)	1Q							
Acoustic Data Inversion/Sensors/Obs Sys (TTS)	1Q,4Q							
Ambient Noise Data/TDA/Mission Planning	4Q							
Auto Clandestine Sensors/Sensors/Obs Sys (TTS)	1Q							
Data Connectivity/METOC in the IT Enterprise	1Q,4Q							
Acoustic Data Acquisition/Sensors/Obs Sys (TTS)	1Q,4Q							
DMAP/TDA/Mission Planning	3Q							
Littoral Battlespace Sensing/Sensors/Obs Sys (in-Situ)	1Q							
USMC Acquisition	4Q	4Q	4Q	4Q				
Sensors/Obs Sys (UVs)			4Q		2Q	4Q		
Sensors/Obs Sys (TTS)		4Q	4Q	4Q	4Q	4Q		
TDA/Mission Planning		4Q	4Q	4Q	4Q	4Q		
METOC in the IT Enterprise		4Q		3Q		2Q		
Sensors/Obs Sys (in-Situ)		4Q	4Q			4Q		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2007**		
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**9.054**	**10.753**	**14.511**	**17.075**	**21.648**	**17.386**	**14.462**	**13.078**
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 (FNMOC), 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, 5) 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 Commander, Fleet Forces Command (CFFC) requirements for remote autonomous, clandestine, littoral battlespace sensing in near shore areas in support of Sea Shield & Sea Basing.

Funding increases in FY08 and beyond support the development of advanced data fusion algorithms and network integration as part of the Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) Program. These efforts are highlighted in the Assimilation and Prediction Models (Atmosphere) and Assimilation and Prediction Models (Ocean) descriptions.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Modeling and Simulation (M&S)/Tactical Design Aids (TDA) and Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.405	1.985	1.091	1.022
RDT&E Articles Quantity				

FY06 - Delivered Version 1.0 of Carrier Strike Group (CSG) / Expeditionary Strike Group (ESG) Environmental Simulator to Naval Oceanography Office (NAVOCEANO). Conducted demonstration and validation. Began development of Version 2.0.
FY07 - Deliver Joint Modeling and Simulations (M&S) support capabilities to Naval Oceanography Command (NAVOCEANO). 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 Anti-Submarine Warfare (ASW) reconstruction and data collection efforts.
FY08 - Begin development of an ASW mission planning tool for operational use at the ASW Reachback Cell (RBC) resident at the NAVOCEANO. Develop ASW Tactical Decision Aids (TDA) asset allocation and mission planning tools to optimize deployment of environmental data collection assets. Explore presentation of mission planning and acoustic reconstruction data in a Geographic Information System (GIS) Develop a algorithms to create area acoustic assessments and analogous exercise area tools.
FY09 - Continue development of ASW mission planning, analysis and reconstruction tools (including GIS) for operational use at the ASW RBC. Tool set will be expanded to support all ASW communities, Integrate mission planning and acoustic reconstruction data in a GIS. Continue to develop ASW TDA asset allocation and mission planning tools to optimize deployment of both environmental data collection assets and tactical acoustic and non-acoustic sensors.

Fleet Exercises/TDA and Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.505			
RDT&E Articles Quantity				

FY06 - Participated in selected Naval Exercises and delivered post exercise strawman and final reports. Continued development of Automated ASW Reconstruction efforts.
FY07 - Efforts incorporated into the TDA and Mission Planning investment line.

High-Resolution Forecast Models/ Assimilation and Prediction Models (Atmosphere)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.881			
RDT&E Articles Quantity				

FY06 - Delivered 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. Began integration of COAMPS Dust algorithms. Continued research directed towards improved Tropical Cyclone forecasts.
FY07 - Efforts incorporated into the "Assimilation and Prediction Models (Atmosphere)" product line.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Coupled Data Assimilation/ Assimilation and Prediction Models (Atmosphere)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.505	1.984	3.995	4.044
RDT&E Articles Quantity				

FY06 - Began operational test of Naval Research Lab (NRL) Atmospheric Variation Data System (NAVDAS) Version 3. Re-code NAVDAS to conform to Weather Research and Forecasting (WRF) compatibility requirements. Developed of next generation coupled assimilation techniques incorporating direct satellite derived radiance data.
FY07 - Complete NAVDAS Version 3 Operational Test (OPTEST) and deliver to FNMOC. Investigate and incorporate Automated Techniques into the next generation data assimilation system. Re-code NAVDAS to conform to Weather Research and Forecasting (WRF) compatibility requirements (from Coupled Data Assimilation). Continue implementing WRF compatibility requirements. Explore incorporation of high-resolution Aerosol analyses and forecasts (from High-Resolution Models). Begin development of Coupled Ocean/Atmosphere Meso-Scale Prediction System (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 operating system Nowcast integration. Develop advanced data fusion algorithms for weather radars in support of the LBSF&I program.
FY08 - LBSF&I: Continue development of advanced algorithms (e.g. Nowcast) that assimilate and fuse various data types such as radial wind velocity, reflectivity, rain rate, etc. generated from the Hazardous Weather Detection and Display Capability (HWDDC) system as well as data types such as electromagnetic refractivity generated from the SPY-1 Tactical Environmental Processor (TEP). Demonstrate the HWDDC fusion algorithms. Develop automated quality control algorithms for these data types. Begin development of an end-to-end methodology to collect, fuse, and integrate these data into Navy and DoD networks and command and control nodes. Develop related systems engineering plans, requirements, standards, studies, and other documentation supporting LBSF&I Joint Capabilities Integration & Development System (JCIDS) and related acquisition documentation development.
METOC Future: Develop advanced data assimilation, coupled meoscale forecast systems. Test performance of 4D-Var (Degrees of Variation) for NAVDAS integration. Extend capabilities of assimilation systems to use additional satellite, remote sensed and insitu data types. Develop architecture for fully coupled ocean and atmospheric system. Continue to develop advanced atmospheric prediction/forecast models. Develop high resolution (small scale) atmospheric models to forecast environmental conditions in the littoral and riverine regions. Develop advanced global atmospheric prediction/forecast models. Develop high resolution (small scale) atmospheric models to nowcast & forecast environmental conditions in the littoral and riverine regions. Development advance aerosol small scale and large scale prediction models.
FY09 - LBSF&I: Continue TEP fusion algorithm development. Demonstrate TEP fusion capability. Continue development of network integration capability. Continue to develop related systems engineering plans, requirements, standards, studies, and other documentation supporting LBSF&I JCIDS development. Develop advance aerosol small scale and large scale prediction models.
METOC Future: Continue development and verify performance of advanced data assimilation, coupled mesoscale forecast systems. Test performance of 4D-Var for NAVDAS integration. Extend capabilities of assimilation systems to use additional satellite, remote sensed and insitu data types. Continue to develop and test fully coupled atmospheric-ocean system. Continue to develop advanced global atmospheric prediction/forecast models. Develop high resolution (small scale) atmospheric models to nowcast & forecast environmental conditions in the littoral and riverine regions. Continue development and test performance of advance aerosol small scale and large scale prediction models.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Basin Scale Ocean Models/	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.855	2.614	6.135	6.114
RDT&E Articles Quantity				

FY06 - Completed the transition of Adriatic Sea model. Transitioned rapid relocatability capability. Performed incremental development of coupled air/ocean models for selected geographical locations in response to emergent requirements. Completed development of Naval Coupled Ocean Data Assimilation (NCODA) Multi-Variate Optimal Interpolation (MVOI). Continued development of Naval Coastal Ocean Model (NCOM) relocateable grid, dynamic Modular Ocean Data Assimilation System (MODAS), and Hybrid Coordinate Ocean Model (HYCOM). Began development of NCODA Vertical Covariance.
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 Next Generation (NEXGEN). Continue development of HYCOM. Complete development of NCOM relocateable. Begin development of NCOM Region A. Complete development of NCODA Vertical Covariance. Begin development of NCODA Horizontal Covariance. Continue development of advanced ADvanced CIRCulation model (ADCIRC) and coastal wave and surf algorithms. Develop advanced data fusion algorithms in support of the LBSF&I program.
FY08 - LBSF&I: Continue development of advanced algorithms that assimilate and fuse various glider and Autonomous Undersea Vehicle (AUV) sensor data types such as conductivity, temperature, depth, optical properties, hydrographic, and bathymetric data. Develop automated data quality control algorithms supporting these data types. Begin development of an end-to-end methodology to collect, transmit, fuse, and integrate these data into Navy and DoD networks and Command and Control nodes. Develop related systems engineering plans, requirements, standards, studies, and other documentation supporting LBSF&I JCIDS and related acquisition documentation development.
METOC Future: Develop advanced data assimilation, coupled mesoscale forecast systems. Test performance of 3D-Var for NCODA integration. Extend capabilities of assimilation systems to use additional satellite, remote sensed and insitu data types. Development of architecture for fully coupled ocean and atmospheric system. Continue to develop advanced ocean prediction/forecast models. Develop high resolution (small scale) atmospheric models to forecast environmental conditions in the littoral and riverine regions. Develop advanced global atmospheric prediction/forecast models. Develop high resolution (small scale) atmospheric models to nowcast & forecast environmental conditions in the littoral and riverine regions.
FY09 - LBSF&I: Continue development of advanced data assimilation and fusion algorithms. Demonstrate TEP fusion algorithm. Demonstrate TEP fusion capability. Continue development of network integration capability and related systems engineering plans, requirements, standards, studies, and other JCIDS required documentation. Test and demonstrate advanced glider data fusion capability.
METOC Future: Continue development and verify performance of advanced data assimilation, coupled mesoscale forecast systems. Test performance of 3D-Var for NCODA integration. Extend capabilities of assimilation systems to use additional satellite, remote sensed and insitu data types. Continue to develop and test fully coupled atmospheric-ocean system. Continue to develop advanced global Numerical Ocean Circulation prediction/forecast models. Develop high resolution (small scale) oceanographic models to nowcast & forecast environmental conditions in the littoral and riverine regions.

Data Assimilation/ Assimilation and Prediction Models (Space)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.255	1.309	1.495	3.829
RDT&E Articles Quantity				

FY06 - Continued to transition applications using next generation WindSat (U.S. Satellite), Meteosat Second Generation (MSG), the Special Sensor Microwave Imager and Sounder (SSMIS), and MTSAT (Japanese replacement satellite). Began development of the next generation of Satellite Workstations.
FY07 - Continue to transition applications using next generation WindSat, MSG, the SSMIS, and MTSAT. Incorporation of Automated Expert System techniques (from Data Assimilation). Continue improvements to the Satellite Workstation.
FY08 - Development of NPP/NPOESS data assimilation algorithms Begin development of data assimilation capability using EUMETSAT (European satellite) and NASA satellite data.
FT09 - Continue development of NPP/NPOESS data assimilation algorithms including development test and evaluation. Continue development of data assimilation capability using data from EUMETSAT satellites and from NASA's Earth Observing System satellites and begin hosting and operational testing at both Naval METOC Production Centers.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Automated Objective Processing/ Assimilation and Prediction Models (Oceans)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.755			
RDT&E Articles Quantity				

FY06 - Delivered prototype global Naval Coastal Ocean Model (NCOM) prediction system upgrades to the Naval Oceanography Command for testing.
FY07 - Efforts incorporated into the "Assimilation and Prediction Models (Oceans)" investment line.

Tide/Surf Data Visualization/ Assimilation and Prediction Models (Oceans)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.505			
RDT&E Articles Quantity				

FY06 - Finalized approved documentation and delivered Version 1 to Ocean Atmosphere Master Library (OAML). Began development of advanced ADCIRC and coastal wave and surf algorithms.
FY07 - Efforts incorporated into the "Assimilation and Prediction Models (Oceans)" investment line.

NEXGEN Acoustic Models/ Assimilation and Prediction Models (Acoustics)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.200	1.862	1.095	1.244
RDT&E Articles Quantity				

FY06 - Incorporated variable range-step option in Range Acoustic Model (RAM) 4.0, consolidated disparate bottom databases into one consolidated database Geoacoustic Database Variable Resolution (GDB-V). Integrated latest acoustic models into the Geo Acoustic Inversion Toolkit (GAIT). Continued development of Semi-Empirical Surface Scattering Strength (SESSS) Version 3.0 (4-10 kHz gap). Continued annual upgrades to the Scalable Tactical Acoustic Propagation Loss Engine (STAPLE) system.
FY07 - Demonstrate and validate RAM 4.0 3D(3 Degrees of Freedom) and deliver OAML. Begin development of RAM 5.0 4D (4 Degrees of Freedom). Complete bottom database consolidation. Continue development of Standard Operating Activities (SOA) GAIT. Begin development of active algorithms for the GAIT. Incorporate Automated Expert Systems model selection algorithms into the next generation RAM (from NEXGEN Acoustic Models). Complete integration of initial uncertainty algorithms into Fleet 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 GAIT (from Shallow Water Acoustics). Continue annual upgrades to the STAPLE system. Complete SESSS 3.0 (4-10 kHz gap).
FY08 - Continue development of RAM. Increase computational speed of the model on ASW TDA processors. Create an OAML Model Testbed by archiving existing passive transmission loss active reverberation datasets. Make modification to the Comprehensive Acoustic System Simulation (CASS) Gaussian Ray Bundle (GRAB) to improve model performance. Begin upgrade of NAUTILUS (a commercial product) propagation model to compute low frequency reverberation. Continue annual upgrades to the STAPLE system. Conduct Reverberation Modeling Workshop. Continue development of the SESSS algorithm. Continue to develop the Geophysical-Acoustic Bottom Interaction Model (GABIM) and GABIM-derived database. Begin development of algorithms that recommend active sonar waveforms based on the state of the environment. Develop an algorithm that validates and improves the quality of modeled low frequency active planning.
FY09 - Continue development of RAM. Continue upgrade of NAUTILUS propagation model Continue annual upgrades to the STAPLE system. Continue development of SESSS. Develop a self-consistent semi-empirical surface loss model. Continue development of the GABIM Version 2.0 and GABIM-derived database. Continue development of algorithms that recommend active sonar waveforms based on the state of the environment.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Shallow Water Acoustics/ Assimilation and Prediction Models (Acoustics)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.755			
RDT&E Articles Quantity				

FY06 - Began development of a Ship of Opportunity version of Geophysical Acoustic Inversion Toolkit (GAIT). Integration of uncertainty predictions into Fleet Tactical Decision Aids (TDA).
FY07 - Efforts incorporated into the "Assimilation and Prediction Models (Acoustics)" investment line.

Fleet Applications and Data Verification & Validation/ TDA and Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.405			
RDT&E Articles Quantity				

FY06 - Delivered Annual Report.
FY07 - Efforts incorporated into the TDA and Mission Planning investment line.

Littoral Battlespace Sensor Data Assimilation/ Sensors and Observing Systems (Unmanned Vehicles)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.028	0.999		
RDT&E Articles Quantity				

FY06 - Developed and delivered initial engineering documentation. Developed in-depth data assimilation methods to support various evolving littoral sensors such as the NEXGEN Upper Ai Sensor, Seaglider, and Helicopter and/or Unmanned Aerial Vehicle (UAV) specific sensors. Developed new sensors and/or reconfigure existing littoral sensors to support littoral Undersea Warfare (USW), Mine Warfare (MIW), Special Operations (SPECOPS) and other Naval Operations. Developed Next Generation Upper Air Sensor prototype. Conducted 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, Underwater Unmanned Vehicle (UUV) gliders, and Helicopter and/or 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Ambient Noise Data/TDA/Mission Planning	FY 06	FY 07	FY08	FY09
Accomplishments/Effort/Subtotal Cost			0.700	0.822
RDT&E Articles Quantity				

FY08 - Development of the regional Ambient Noise Database (ANDB). Incorporate archived directional ambient noise time series observational data into the ANDB. Update historical shipping databases with non-traditional vessel density data. Commence development of a short-term ambient noise forecasting capability using previously collected ambient noise data from tactical sensors. Incorporate Adaptive Beam Forming (ABF) techniques into existing noise models. Develop methods to aid in the collection, archiving/databasing ambient noise data for later inclusion in historical databases supporting ASW TDAs. Develop TDA uncertainty algorithms.
FY 09 - Continue development of the regional ANDB. Continue development of a short-term ambient noise forecasting capability using previously collected ambient noise data from tactical sensors. Continue to develop methods and techniques to aid in the collection, archiving/databasing and dissemination of both omni-directional and directional ambient noise data. Engineering design for NEXGEN ambient noise model, data assimilation and forecasting tool. Continue to develop TDA uncertainty algorithms.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable

(U) D. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies to support the 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).

(U) E. MAJOR PERFORMERS:

Not applicable

(U) F. METRICS:

Earned Value Management (EVM) is used for metrics reporting and risk management.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT
PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME
2342 METOC Data Assimilation and Modeling

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	64.032	8.556	N/A	10.171	N/A	11.970	N/A	CONT	CONT	
	WX	NAWC-WD, Pax	1.981	0.285	N/A	0.250	N/A	0.750	N/A	CONT	CONT	
	PD	APL	1.628	0.397	N/A	0.347	N/A	0.750	N/A	CONT	CONT	
	Grant	Univ. S. Miss.	2.413		N/A		N/A		N/A	CONT	CONT	
	CP	Neptune	1.722	0.445	N/A	0.760	N/A	.	N/A	CONT	CONT	
	CP	New Age	1.421	0.445	N/A	1.225	N/A	1.225	N/A	CONT	CONT	
	N/A	MISC	12.775	0.623	N/A		N/A	0.580	N/A	CONT	CONT	
	CP	Seaport-e (SAIC/Metron)	1.025		N/A	1.758		1.800				
Subtotal Software Development			86.997	10.753		14.511		17.075		CONT	CONT	

Remarks:

Systems Engineering	CP	SSA/CSC	0.295							CONT	CONT	
Subtotal Support			0.295							CONT	CONT	

Remarks:

Total Cost			87.292	10.753		14.511		17.075		CONT	CONT	

CLASSIFICATION:

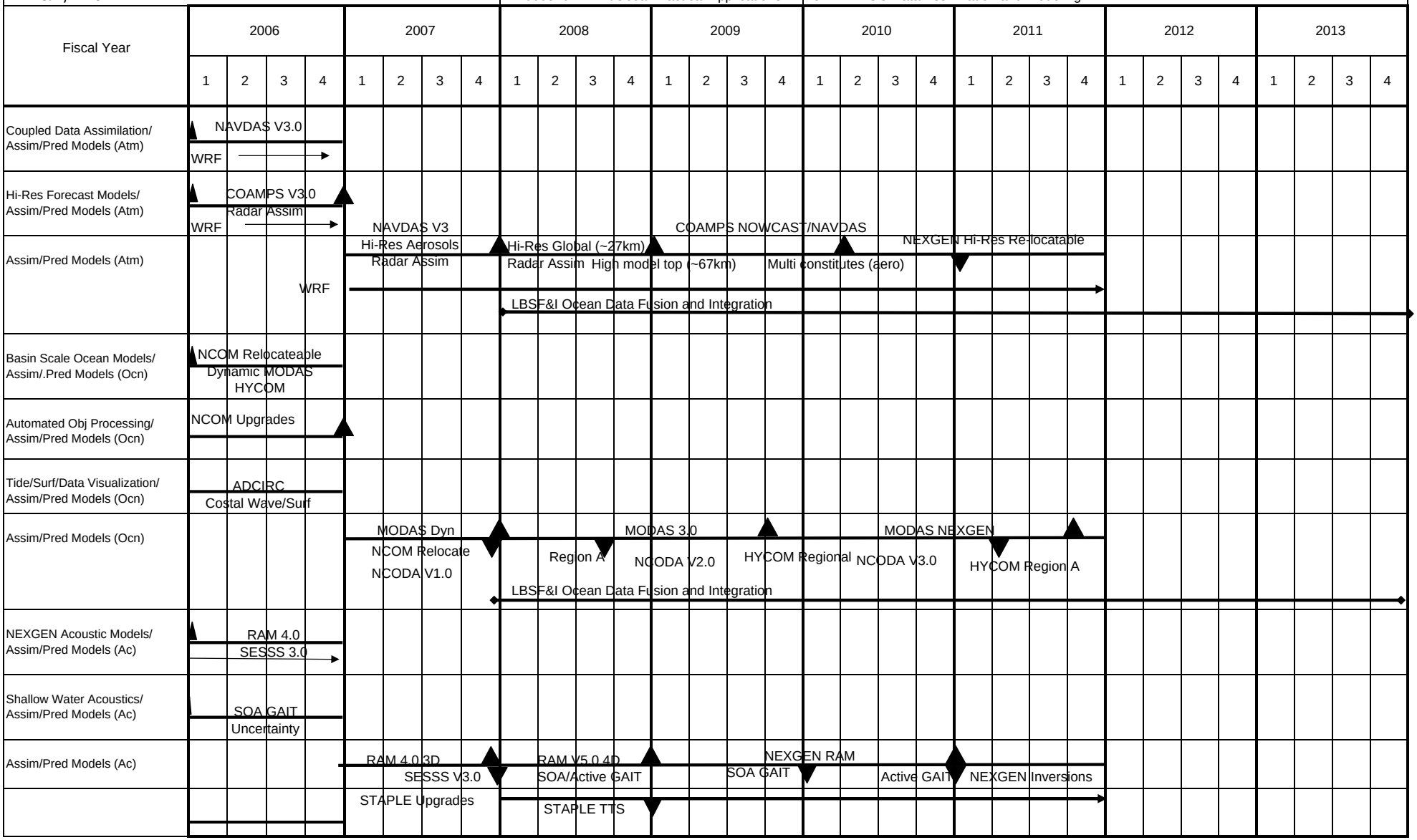
EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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



CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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	2006				2007				2008				2009				2010				2011				2012				2013			
	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
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																															
Fleet Exercises/ TDA and Mission Planning	Strawman Auto ASW Reconstruct																															
TDA/Mission Planning					CSG/ESG Env Sim V2.0 Auto ASW Reconstruction V1.0								CSG/ESG Env Sim V3.0 Auto ASW Reconstruction V2.0								Joint Integration											
Data Assimilation/ Assim/Pred Models (Space)	NEXGEN Sat Workstation				WindSat, Meteosat, SSMIS Satellite Workstation Upgrades								NPP/NEXGEN Sensor Integration																			
Littoral Battlespace Sensing/ Sensors/Obs Systems (UVs)					Glider Enhancements AUV Dev					Glider/AUV Sensor Upgrades																						

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2342 METOC Data Assimilation and Modeling			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Coupled Data Assimilation/Assim/Pred Models (Atmosphere)							
High-Resolution Forecast Models/Assim/Pred Models (Atmosphere)	4Q						
Assim/Pred Models (Atmosphere)		4Q	4Q		1Q	1Q	
Basin Scale Ocean Models/Assim/Pred Models (Ocean)							
Automated Objective Processing/Assim/Pred Models (Ocean)	4Q						
Tide/Surf/Data Visualization/Assim/Pred Models (Ocean)							
Assim/Pred Models (Ocean)		4Q	3Q	4Q		1Q	
NEXGEN Acoustic Models/Assim/Pred Models (Acoustics)							
Shallow Water Acoustics/Assim/Pred Models (Acoustics)							
Assim/Pred Models (Acoustics)		4Q	4Q	4Q	4Q		
Modeling and Simulation/TDA and Mission Planning	3Q						
Fleet Apps/Data V&V/TDA and Mission Planning	4Q						
Fleet Exercises/TDA and Mission Planning	4Q						
TDA and Mission Planning			4Q		4Q		
Data Assimilation/Assim/Pred Models (Space)			4Q	4Q	4Q		
Littoral Battlespace Sensing/Sensors/Observing Systems (UVs)		4Q		4Q	4Q	4Q	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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)	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Project Cost	**7.381**	**8.652**	**7.678**	**6.373**	**6.805**	**6.229**	**6.387**	**6.549**
RDT&E Articles Qty								

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

The Tactical Meteorological and oceanographic (METOC) 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 Naval Special Warfare (NSW). 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, and numerically modeled forecast 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 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 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 shallow water ASW, NSW, and missile and air defense/strike capabilities.

This budget reflects changes in investment line description beginning in FY07. This change supports acquisition and development investment lines that support the vision, operations concept, and capability requirements. Changes consolidate and better define RDT&E efforts as well as better reflect the new Commander Naval Meteorological and Oceanographic Command (CNMOC) reorganization.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

(U) B. Accomplishments/Planned Program

Electromagnetic and Electro-optical (EM/EO) Decision Aids/ TDA/Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.740	8.652	7.678	6.373
RDT&E Articles Quantity				

FY06 - Completed development of Target Acquisition Weather Software (TAWS) Version 3.0 to include new sensor data and backgrounds consistent with Joint Operations. Continued development of TAWS 4.0 (web-enabled). Developed upgrades to next generation Electromagnetic and Electro-optical (EM/EO) performance prediction systems to include incorporation of new Navy and Joint Sensor Suites. Began porting Advanced Refractive Effects Prediction System (AREPS) code to JAVA. Began 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 Mine Warfare Environmental Data Applications Library (MEDAL) acoustic databases and models. Continue development of NITES NG.
FY08 - Development of System architecture, system engineering, Preliminary Design Review (PDR), Critical Design Review (CDR), initial software development and Pre-Milestone C acquisition activities for NITES NG, including integration of updates to sensor data and backgrounds consistent with Joint Operations and development of upgrades to next generation EM/EO and AREPS performance prediction systems to include incorporation of new Navy and Joint Sensor Suites. Develop MEDAL to include the incorporation of the new environmental databases and model updates . Support transition in fleet for integration of new EM/EO TAWS, and advanced visualization techniques for Global Command and Control System - Maritime and Joint (GCCS-M and GCCS-J) integration prior to NITES NG transition in FY08 to include integration of new EM/EO, TAWS, and advanced visualization techniques for GCCS-M and GCCS-J integration.
FY09 - Milestone C activities and associated development of system architecture, system engineering, software development, test and integration activities for NITES NG including development of upgrades to next generation EM/EO and AREPS performance prediction systems to include incorporation of new Naval and Joint Sensor Suites. Develop MEDAL to include the incorporation of the new environmental databases and model updates .

Mine Littoral Warfare Tactical Decision Aids (TDA)/ TDA/Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.567			
RDT&E Articles Quantity				

FY06 - Performed development to incorporate additional mine littoral warfare decision aids in applicable performance prediction systems. Developed 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.672			
RDT&E Articles Quantity				

FY06 - Developed Network integration via Commercial Joint Mapping Tool Kit (CJMTK) and integration of evolving Geospatial Information Services (GIS) based technology.
FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) B. Accomplishments/Planned Program

Platform Vulnerability/TDA/Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.266			
RDT&E Articles Quantity				

FY06 - Developed TDA Version 4 to include integration of new EM/EO, TAWS, and advanced visualization techniques such as 4D Visualization.
FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

Sensor Interface Capabilities/TDA/Mission Planning	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.136			
RDT&E Articles Quantity				

FY06 - Performed evolutionary development of Build 3.5. Evaluated functionality during at-sea tests and deliver technical reports. Completed Integrated Ocean Observing System (IOOS) effort.
FY07 - Efforts rolled into the "TDA/Mission Planning" investment line.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable

RELATED RDT&E: PE 0604218N (Air/Ocean Equipment Engineering). TESS/NITES will incorporate METOC data applications.

(U) D. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the Tactical METOC 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 incorporating these into Naval Integrated Tactical Environmental System Next Generation (NITES NG) under JCIDS by Program Executive Officer for Command, Control, Communications, Computers, and Intelligence and Space (PEOC4I & Space).

(U) E. MAJOR PERFORMERS:

N/A

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: 2343 Tactical METOC Applications

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NUWC	1.400	0.830	N/A					CONT	CONT	
	WX	SSC SD	3.459	0.525	N/A	0.535	N/A	0.546	N/A	CONT	CONT	
	WX	NRL	2.343	0.525	N/A	0.360	N/A	0.430	N/A	CONT	CONT	
	CP/DP	NAVSEA	38.152	0.400	N/A	0.350	N/A	0.350	N/A	CONT	CONT	
	CP	LOCKHEED	1.053									
	N/A	MISC	6.370	0.675	N/A	0.688	N/A	0.702	N/A	CONT	CONT	
	CP	SeaPort e		1.167	N/A	1.126	N/A	1.067	N/A	CONT	CONT	
	CPAF	Anteon	3.600	2.000	N/A							
	CP	NITES NG Contract		2.530	Q3	4.619	N/A	3.278	N/A	CONT	CONT	
Subtotal Product Development			56.377	8.652		7.678		6.373			79.080	

Remarks:

	CP	IPD	0.595							CONT	CONT	
Subtotal Support			0.595							CONT	CONT	

Remarks:

Total Cost			56.972	8.652		7.678		6.373		CONT	CONT	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

February 2007

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	2006				2007				2008				2009				2010				2011				2012				2013			
	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 3.0 JAVA AREPS																															
Mine Warfare TDAs/ TDA/Mission Planning	MEDAL Update																															
TDA COTS Visualization/ TDA/Mission Planning	NITES NG																															
Platform Vulnerability/ TDA/Mission Planning	NITES II Upgrade																															
Sensor Interface Capabilities/ TDA/Mission Planning	IOOS																															
TDA/Mission Planning					NITES NG MEDAL Update TAWS 4.0 EM Server				NITES NG MEDAL Update TAWS/AREPS Platform Vulnerability				NITES NG TAWS/AREPS				NITES NG LBSI&F							NITES NG DCGS-N							

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME 2343 Tactical METOC Applications			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
EM/EO Decision Aids/TDA and Mission Planning	4Q							
Mine Warfare TDAs/TDA and Mission Planning	4Q							
TDA COTS Visualization/TDA and Mission Planning	4Q							
Platform Vulnerability/TDA and Mission Planning	4Q							
Sensor Interface Capabilities/TDA and Mission Planning	4Q							
TDA and Mission Planning		4Q	4Q	4Q		1Q		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**1.285**	**1.590**	**1.216**	**1.270**	**1.321**	**1.319**	**1.344**	**1.370**
RDT&E Articles Qty								

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

The major thrust of the Precise Timing and Astrometry Project (PTA) 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

(U) B. Accomplishments/Planned Program

Time Transfer/ Precise Timing, Astrometry, & Reference Frames	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.392	1.590	1.216	1.270
RDT&E Articles Quantity				

FY06 - Developed next generation Global Positioning System (GPS) Independent Time Transfer. Completed 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 Charge Coupled Device (CCD) array for the USNO Robotic Astrometric Telescope.
FY08 - Complete development of algorithm for ensemble clock system. 24/7 demonstration of fountain ensemble clock. Mod M-code GPS receiver to meet final specifications. Demo URAT focal plane.
FY09 - Initiate ensemble demo at Alternate Maser Clock (AMC) facility. Demo final M-Code receiver. Design astrometric space mission.

Earth Orientation/Astrometry/ Precise Timing, Astrometry, & Reference Frames	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.430			
RDT&E Articles Quantity				

FY06 - Completed Orion Array Prototype Detector. Performed incremental development of next generation earth orientation techniques (Astrometric Telescope). Began 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.463			
RDT&E Articles Quantity				

FY06 - Performed initial testing and completed initial Technical Reports. Demonstrated 24/7 operational capability of Rubidium Fountain Clock. Began development of Ensemble Fountain Clock Systems.
FY07 - Efforts rolled into the "Precise Timing, Astrometry & Reference Frames" Investment line.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable.

(U) D. ACQUISITION STRATEGY:

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).

(U) E. MAJOR PERFORMERS:

N/A

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME 2344 Precise Timing and Astrometry						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	Naval Observatory	10.646	1.590	N/A	1.216	N/A	1.270	N/A	CONT	CONT	
	N/A	MISC	0.094							CONT	CONT	
Subtotal Software Development			10.740	1.590		1.216		1.270		CONT	CONT	
Remarks:												
Subtotal Support												
Remarks:												
Total Cost			10.740	1.590		1.216		1.270		CONT	CONT	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
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	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Time Transfer/ Precise Timing, Astrometry, & Reference Frames	M Code Timing Rx																															
Earth Orientation/ Precise Timing, Astrometry, & Reference Frames	Radiation Mitigation Demo																															
Master Clock/ Precise Timing, Astrometry, & Reference Frames	Rubidium Demo Ensemble Frqn Clck																				Optical Atomic Clock				Optical Atomic Clock				Optical Atomic Clock			
Precise Timing, Astrometry, & Reference Frames					M Code Demo Atomic Fountain URAT FPA Ensemble Clk Demo						Ens Clk Demo URAT FPA Demo						GPS III Timing Rx				Space Focal Plane Array				Space Focal Plane Array				Space Focal Plane Array			

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME 2344 Precise Timing and Astrometry			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Time Transfer/Precise Timing, Astrometry & Reference Frames								
Earth Orientation/Precise Timing, Astrometry & Reference Frames								
Master Clock/Precise Timing, Astrometry & Reference Frames								
Precise Timing, Astrometry & Reference Frames		4Q		4Q		3Q	3Q	3Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	9999 Congressional Increases	

(U) B. Accomplishments/Planned Program

9890 3D-CMAPS	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.394	0.000	0.000	0.000
RDT&E Articles Quantity				

FY06: The 3D-CMAPS Congressional Add provided the Navy an opportunity to evaluate a newly developed commercial sonar technology. This new sonar technology has the potential to be the next-generation for hydrographic surveying and seafloor bottom imaging sonar in support of Mine Warfare.

9891 Gateway System	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.958	0.000	0.000	0.000
RDT&E Articles Quantity				

9892 Littoral Acoustic Demonstration Center	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.958	0.000	0.000	0.000
RDT&E Articles Quantity				

9891 Gateway Concept	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.996	0.000	0.000
RDT&E Articles Quantity				

FY07: Develop a new design for underwater cable connections.

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603216N, AVIATION SURVIVABILITY		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	44.284	29.513	6.252	5.985	6.626	6.762	6.882	7.003
0584 A/CREW PROTECT CLOTHING/DEVIC	2.709	2.386	2.425	2.002	2.561	2.615	2.662	2.711
SAFETY	1.549	1.544	1.577	1.623	1.656	1.692	1.722	1.753
0592 A/CREW & ORDANCE SAFETY	1.259	1.523	1.541	1.616	1.650	1.681	1.711	1.739
1819 CV ACFT FIRE SUPPRESSION	.560	.700	.709	.744	.759	.774	.787	.800
9999 CONGRESSIONAL ADDS	38.207	23.360						

(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.

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY07 President's Budget:	44.261	6.177	6.319	6.452
FY08 President's Budget:	44.284	29.513	6.252	5.985
Total Adjustments	0.023	23.336	-0.067	-0.467

Summary of Adjustments				
Congressional Reductions	-0.391			
Congressional Rescissions				
Congressional Undistributed Reductions	-0.930	-0.114		
Congressional Increases	1.350	23.450		
Economic Assumptions			0.005	0.105
Miscellaneous Adjustments	-0.006		-0.072	-0.572
Subtotal	0.023	23.336	-0.067	-0.467

Schedule: 0591 Advanced Fire Protection Test will take place within first two quarters of FY 2011 due to better estimation of program requirements.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603216N, AVIATION SURVIVABILITY

Technical: 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. 9999 Congressional adds support Aviation Survivability.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0584 A/CREW PROTECT CLOTHING/DEVIC	2.709	2.386	2.425	2.002				
RDT&E Articles Qty								

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.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Advanced Technology Crew Station	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.428	1.241	1.275	1.169
RDT&E Articles Qty				

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.

Advanced Integrated Life Support System	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.281	1.145	1.150	.833
RDT&E Articles Qty				

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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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

C. OTHER PROGRAM FUNDING SUMMARY:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY: Not Applicable

Exhibit R-3 Cost Analysis (page 1)

DATE: February 2007

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

PROGRAM ELEMENT: 0603216N, AVIATION SURVIVABILITY

PROJECT NUMBER AND NAME: 0584, A/CREW PROTECT CLOTHING/DEVIC

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Licenses	VARIOUS	VARIOUS	.180	.180	12/1/2006	.180	12/1/2007	.180	12/1/2008	Continuing	Continuing	
Primary Hdw Development	VARIOUS	VARIOUS	1.097	1.061	1/1/2007	1.100	1/1/2008	.677	1/1/2009	Continuing	Continuing	
Systems Eng	WR	NAWCAD, PATUXENT RIVER MD	25.890	.515	12/1/2006	.515	12/1/2007	.515	12/1/2008	Continuing	Continuing	
Systems Eng	VARIOUS	VARIOUS	13.900								13.900	
SUBTOTAL PRODUCT DEVELOPMENT			41.067	1.756		1.795		1.372		Continuing	Continuing	

Remarks:

SUPPORT												
Configuration Mgmt	WR	NAWCAD, PATUXENT RIVER MD	.532								.532	
Configuration Mgmt	VARIOUS	VARIOUS	3.232								3.232	
SUBTOTAL SUPPORT			3.764								3.764	

Remarks:

TEST & EVALUATION												
Dev Test & Eval	WR	NAWCAD, PATUXENT RIVER MD	1.018	.200	12/1/2006	.200	12/1/2007	.200	12/1/2008	Continuing	Continuing	
Dev Test & Eval	VARIOUS	VARIOUS	18.240								18.240	
SUBTOTAL TEST & EVALUATION			19.258	.200		.200		.200		Continuing	Continuing	

Remarks:

MANAGEMENT												
Program Mgmt Sup	WR	NAWCAD, PATUXENT RIVER MD	.410	.410	12/1/2006	.380	12/1/2007	.380	12/1/2008	Continuing	Continuing	
Travel	TO	NAVAIR, PAXTUXENT RIVER MD	.165	.020	10/1/2006	.050	12/1/2007	.050	12/1/2008	Continuing	Continuing	
SUBTOTAL MANAGEMENT			.575	.430		.430		.430		Continuing	Continuing	

Remarks:

Total Cost			64.664	2.386		2.425		2.002		Continuing	Continuing	

Remarks:

EXHIBIT R4, Schedule Profile

DATE: February 2007

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

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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
Program Milestone																																
Agile Laser Eye Protection																																
Unity Magnfication Goggle																																
Intensified Unity Mag Goggle																																
Advance Helmet Vision Systems																																
Visually Coupled Display (high resolution)																																
Advanced Integrated Life Support System (AILSS)																																
Smart AILSS (SAILSS)																																
Injury Prevention																																
Test & Evaluation Milestones																																
AHVS Laboratory testing																																
ANGEL																																
Advanced Technology Crew Station (ATCS)																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0584, A/CREW PROTECT CLOTHING/DEVIC			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Advanced Technology Crew Station (ATCS)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Agile Laser Eye Protection	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q				
Unity Magnification Goggle	1Q-2Q							
Intensified Unity Mag Goggle	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q				
Advanced Helmet Vision System (AHVS)	1Q-4Q	1Q-4Q						
Visually Coupled Display (high resolution)	1Q-4Q							
Advanced Integrated Life Support System (AILSS)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Smart AILSS (SAILSS)	1Q-4Q	1Q-4Q						
Injury Prevention	1Q-4Q	1Q-4Q						
AHVS Laboratry Testing	1Q-4Q	1Q-4Q						

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 0591, A/C SURVIVABILITY, VULNERABILITY AND SAFETY

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0591 A/CREW SERV & VUNERAB & SAFETY	1.549	1.544	1.577	1.623				
RDT&E Articles Qty								

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.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Technology Requirements	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.341	.342	.160	.202
RDT&E Articles Qty				

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.

Technology Design & Development	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.119	1.113	1.017	.921
RDT&E Articles Qty				

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 fire and fuel protection systems, transparent and opaque armors, exhaust suppressors,counter-asymmetric threat hardware.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 0591, A/C SURVIVABILITY, VULNERABILITY AND SAFETY

Technology Test & Evaluations	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.089	.089	.400	.500
RDT&E Articles Qty				

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 (through engineering change proposal (ECP) or spiral development).

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY: Not Applicable

Exhibit R-3 Cost Analysis (page 1)

DATE: February 2007

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

PROGRAM ELEMENT: 0603216N, AVIATION SURVIVABILITY

PROJECT NUMBER AND NAME: 0591, A/C SURVIVABILITY, VULNERABILITY AND SAFETY

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hdw Development	SS-CPFF	BELL HELICOPTER				.577	1/31/2008	.536	1/31/2009		1.113	1.113
Primary Hdw Development	SS-CPFF	VARIOUS	9.381	.387	12/1/2006						9.768	9.768
Systems Eng	VARIOUS	VARIOUS	8.928	.250	11/1/2006	.100	11/1/2007	.100	11/1/2008	CONTINUING	CONTINUING	
Systems Eng	MP	US ARMY				.125	11/1/2007	.075	11/1/2008	CONTINUING	CONTINUING	
Systems Eng (RB) MFOQA	WR	NSWC CARDEROCK D, WST BETHESDA	4.520								4.520	
SUBTOTAL PRODUCT DEVELOPMENT			22.829	.637		.802		.711		CONTINUING	CONTINUING	

Remarks:

SUPPORT												
Development Support, MFOQA	WX	NSWC, CARDEROCK, MD	2.483								2.483	
Software Development, MFOQA	SS/CPFF	BOEING, ST LOUIS MO	1.012								1.012	1.012
Technical Data	WX	VARIOUS	.279								.279	
Studies & Analyses (DC)	CPFF	SURVICE, INC	.400	.185	11/1/2006						.585	.585
Systems Eng (DC)	CPFF	SURVICE, INC				.150	12/31/2007	.175	12/31/2008		.325	.325
Systems Eng (DC)	TBD	WYLE				.060	12/31/2007	.060	12/31/2008	CONTINUING	CONTINUING	
SUBTOTAL SUPPORT			4.174	.185		.210		.235		CONTINUING	CONTINUING	

Remarks:

TEST & EVALUATION												
Dev Test & Eval (RB)	WX	NAWCAD, PATUXENT RIVER MD	.198								.198	
Dev Test and Eval	WX	VARIOUS	1.922								1.922	
Live Fire Test & Evaluation	WX	NAWCWD CHINA LAKE CA	.550	.643	11/1/2006	.305	11/1/2007	.392	11/1/2008	CONTINUING	CONTINUING	
Live Fire Test & Evaluation	MP	ARMY RESEARCH LAB				.100	11/30/2007	.125	11/30/2008	CONTINUING	CONTINUING	
SUBTOTAL TEST & EVALUATION			2.670	.643		.405		.517		CONTINUING	CONTINUING	

Remarks:

MANAGEMENT												
Program Mgmt Sup	VARIOUS	VARIOUS	.384	.069	VARIOUS	.100	12/31/2007	.100	12/31/2008	CONTINUING	CONTINUING	
Program Mgmt Sup	TBD	JF TAYLOR, LEXINGTON PARK, MD				.030	1/31/2008	.030	1/31/2009		.060	.060
Travel (RB)	TO	NAVAIR HQ, PATUXENT RIVER, MD	.254	.010	11/1/2006	.030	11/1/2007	.030	11/1/2008	CONTINUING	CONTINUING	
SUBTOTAL MANAGEMENT			.638	.079		.160		.160		CONTINUING	CONTINUING	

Remarks:

Total Cost			30.311	1.544		1.577		1.623		CONTINUING	CONTINUING	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE: February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N / BA-4	0603216N, AVIATION SURVIVABILITY	0591, A/C SURVIVABILITY, VULNERABILITY AND SAFETY

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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																																
Survivability Master Plan Updates																																
Asymmetric Threat Evaluations																																
Survivability Methodology Analysis																																
Advanced Fire Protection Program																																
Technology Design & Development																																
Rotary Wing Prototype Hardware																																
Survivability Improvements																																
Advanced Fire Protection Program																																
Technology Test & Evaluation																																
COBIGGS Gnd/Flt Tests																																
Rotary Wing Ballistic Testing																																
Rotary Wing Signature Tests																																
Prototype Hardware Tests																																
Advanced Fire Protection Test																																
Production Milestones																																

Deliveries

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0591, A/C SURVIVABILITY, VULNERABILITY AND SAFETY			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Technology Requirement								
Survivability Master Plan Updates		4Q		4Q		4Q		4Q
Asymmetric Threat Evaluations	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Survivability Methodology Analysis	1Q							
Advanced Fire Protection Program			1Q-4Q					
Technology Design & Development								
Rotary Wing Prototype Hardware	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Survivability Improvements			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Advanced Fire Protection Program				1Q-4Q	1Q-4Q			
Technology Test & Evaluation								
COBIGGS Gnd/Flt Tests	1Q							
Rotary Wing Ballistic Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Rotary Wing Signature Tests		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Prototype Hardware Tests			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Advanced Fire Protection Test						1Q-2Q		

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0592 A/CREW & ORDANCE SAFETY	1.259	1.523	1.541	1.616				
RDT&E Articles Qty								

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.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Insensitive Munitions	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.259	1.523	1.541	1.616
RDT&E Articles Qty				

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 warheards, 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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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

C. OTHER PROGRAM FUNDING SUMMARY:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. 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.

Exhibit R-3 Cost Analysis (page 1)												DATE: February 2007
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 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Systems Eng	WX	NAWCWD CHINA LAKE CA	21.987	1.523	10/30/2006	1.541	10/30/2007	1.616	10/30/2008	CONTINUING	CONTINUING	
SUBTOTAL PRODUCT DEVELOPMENT			21.987	1.523		1.541		1.616		CONTINUING	CONTINUING	

Remarks:

SUPPORT												
SUBTOTAL SUPPORT												

Remarks:

TEST & EVALUATION												
SUBTOTAL TEST & EVALUATION												

Remarks:

MANAGEMENT												
SUBTOTAL MANAGEMENT												

Remarks:

Total Cost			21.987	1.523		1.541		1.616		CONTINUING	CONTINUING	

Remarks:

EXHIBIT R4, Schedule Profile			DATE: February 2007
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	

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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
Air to Air Missile Propulsion System Demo Testing																																
Shock/Blast Barrier Protection Modeling and Demo/Testing																																
Improved Air Launched Weapons																																
Advanced Energetic Materials																																
Advanced Containment/Case/Warhead Materials																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 0592, A/CREW & ORDANCE SAFETY			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Air to Air Missile Propulsion System Demo/Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Shock/Blast Barrier Protection Modeling and Demo/T	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Improved Air Launched Weapons	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Advanced Energetic Materials	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Advanced Containment/Case/Warhead Materials	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 1819, CV ACFT FIRE SUPPRESSION

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
1819 A/C PROT	.560	.700	.709	.744				
RDT&E Articles Qty								

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.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Fire Fighting	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.560	.700	.709	.744
RDT&E Articles Qty				

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.

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.

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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 1819, CV ACFT FIRE SUPPRESSION

C. OTHER PROGRAM FUNDING SUMMARY:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY: Not Applicable

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**38.207**	**23.360**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

CONGRESSIONAL ADDS

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS	

B. Accomplishments/Planned Program

9170	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.228			
RDT&E Articles Quantity				

Modular Advanced Vision System

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.

9173	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.704	2.989		
RDT&E Articles Quantity				

Rotorcraft External Airbag Protection

Rotocraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors and algoritms. Initial impact studies (water and ground) have already been conducted. Two flight tests of the REAPS system onboard H-53 will be conducted.

9346	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.304	1.195		
RDT&E Articles Quantity				

Equipment Life Extension Project

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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9505	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.057			
RDT&E Articles Quantity				

Advanced Maritime Technology Center

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.

9506	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.058			
RDT&E Articles Quantity				

Integrated Manifold and Tube Ceramic Oxygen Generator

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.

9507	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.420	1.793		
RDT&E Articles Quantity				

Intellegent Autonomy Transition Program

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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9508	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.570			
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.704	1.793		
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.

9726	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.293			
RDT&E Articles Quantity				

Authentic Tactical Flight Simulator Operational Val

Support a high fidelity F/A-18 cockpit on an ETC centrifuge. The research will address control / display design, symbology, physiology during flight, and training. One goal is to determine th fidelity / level of transfer of training from simulator to airframe.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9757	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.958			
RDT&E Articles Quantity				

Aviation Fire Suppression Production Alignment

Aviation Fire Suppression Production Alignment.

9758	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.701			
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.305			
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.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS	

B. Accomplishments/Planned Program

9760	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.387			
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.547			
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.070			
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 use 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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9763	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.969	0.996		
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.

584	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.932			
RDT&E Articles Quantity				

Agile Laser Eye Protection

Funding will develop 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 preception.

9961	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		1.594		
RDT&E Articles Quantity				

AIR SENTINEL

Funding will develop an automated system that resides in the ground control station of a UAV system for the detection and management of unmanned aircraft emegencies.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9962	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		3.985		
RDT&E Articles Quantity				

Integrated Command Decision Work Environment

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 w ensure alignment of the technology to meet the emerging requirements of U.S. Navy new ship construction and modernization plans.

9963	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		1.992		
RDT&E Articles Quantity				

Intelligence Gathering Uninhabited System

Funds to provide an operational system to joint ground forces for localized Intelligence, Surveillance, and Reconnaissance System that are based on an open and scalable systems architecture in a low impact and cost effective manner.

9964	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		3.238		
RDT&E Articles Quantity				

Joint Helmet Mounted Cueing System QuadEye

To develop a light weight, modular night vision camera capable of being integrated into current and future helmet mounted displays .

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603216N, AVIATION SURVIVABILITY	9999, CONGRESSIONAL ADDS

B. Accomplishments/Planned Program

9965	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		2.789		
RDT&E Articles Quantity				

Unmanned Aircraft Systems Optimization Tech

To optimize the performance of the sensors onboard both manned and unmanned vehicles, stationary systems and smart dust.

9966	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		0.996		
RDT&E Articles Quantity				

Unmanned Force Augmentation System

To continue research, development and testing of advanced Unmanned Air System technologies that facilitate the rapid transition of Unmanned Air Vehicle systems to the warfighters that offer order-of-magnitude improvements in usability, capability, and operational effectiveness.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4**			R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)					
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**40.640**	**16.321**	**9.475**	**7.998**	**8.172**	**8.316**	**8.454**	**8.596**
3050 Deployable Joint Command & Control	**40.640**	**16.321**	**9.475**	**7.998**	**8.172**	**8.316**	**8.454**	**8.596**
Quantity of RDT&E Articles								

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Deployable Joint Command and Control (DJC2) is a Secretary of Defense (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 selected Regional Combatant Commander (RCC). 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), Operational Requirements Document (ORD) and a Capabilities Production Document (CPD).

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.

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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4**	R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)	

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 Science and Technology (S&T) initiatives, Advanced Concepts Technology Demonstration (ACTD) Programs, programs of record, and fielded capabilities of the services and defense agencies, scaled to the Regional Combatant Commander (RCC) level. 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.

(**U**) **A. 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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)	

(U) B. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY07 President's Budget	40.841	16.383	41.741	7.883
FY08/09 President's Budget Submit	40.640	16.321	9.475	7.998
Total Adjustments	-0.201	-0.062	-32.266	0.115
Summary of Adjustments				
Program Adjustments	-0.201		-32.037	0.061
BRAC - Create an Integrated Weapons & Armaments Specialty Site for Guns & Ammo				0.009
BRAC - Create Naval Int. Weapons & Arm. Research, Dev & Acq, Test & Eval Center			-0.001	-0.008
BRAC 05 Mitigation Strategy Balancer			0.001	0.008
FY 08 / FY 09 NWCF Rate Adjustments - Naval Surface Warfare Center			-0.005	-0.003
FY 08 / FY 09 NWCF Rate Adjustments - SPAWAR Systems Centers			0.007	0.002
Sec. 8106: Revised Economic Assumptions		-0.062		
Non-Purchase Inflation Adj.			-0.231	0.046
Subtotal	-0.201	-0.062	-32.266	0.115

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)

(U) B. Accomplishments/Planned Program

Systems Engineering & Integration	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	20.236	4.616	3.443	3.700
RDT&E Articles Quantity				

FY06: Conducted assessments and began detailed planning for follow-on increment and methodology necessary to implement design into the engineering test bed, as well as the Joint Forces Command (JFCOM), Pacific Command (PACOM), and US Central Command (CENTCOM) systems. Refined Architecture views necessary to support follow-on Increment Information Support Plan, Cost Documentation, Testing, and Capabilities Production Document. Performed necessary requirements decomposition using Rational Unified Process, driving toward a production level specification. Began testing and integrating service based architecture, refining knowledge management procedures necessary for incorporation into the Global Information Grid Enterprise Services (GIG-ES) Model. Evaluated and began transition of hardware toward Internet Protocol 6.0. Identified solution for Multi-Level Security and evaluated impact on IT server size and deployability. Determined impact on bandwidth and refinement of data reach back procedures to specified Centers of Excellence, optimizing only handling information once (OHIO). Conducted necessary design reviews to validate proposed design. Continued analysis and architectural design for technologies identified as part of the technology insertion process for Increment I. Began to prototype and test small scale, two man portable, two secure network rapidly response command and control capability(R2C2). Began development of an Everything Over Internet Protocol (EOIP) transition capability for DJC2 as part of the migration toward net-centricity.

FY07: Complete prototyping and testing of R2C2 capability. Complete development of EOIP capability for DJC2 as part of the migration toward net-centricity.

FY08: Identify upgrades to the Increment I DJC2 Systems. Continue Increment I migration to Net-Centricity and update design documentation and training material to reflect changes driven by emerging and required Enterprise Services Key Information Profiles. Update system to meet Transport KIP requirements mandated by the Net Ready Key Performance Parameter levied on DJC2 by the Joint Requirements Oversight Council. Obtain prototype upgrade equipment and conduct trade studies per the system engineering guidelines. Document system performance and finalize a design for DJC2 Increment I Upgrade. Conduct Critical Design Review for upgrade plan and upon design approval, prepare the mandatory Engineering Change Proposal, identifying all testing, training, suppo and sparing requirements. Construct, integrate and test an alternative packing capability for DJC2. Identify, integrate and test world-wide power modification to DJC2.

FY09: Complete Critical Design Reviews for upgrade plan. Continue with system engineering analysis and Integration activities. Operational test technology insertion/technology refresh design modifications.

DJC2 RDT&E Test Bed	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.396	6.892	4.032	3.048
RDT&E Articles Quantity				

FY06: Developed and implemented changes in the DJC2 RDT&E test bed based on lessons learned in Advanced Concepts Technology Demonstrations (ACTDs) and operations/exercises. Utilized the test bed in realistic military demonstrations, and on that basis, made assessments of the military utility.

FY07: Continue to 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.

FY08: Conduct field testing and developmental testing of final Increment I Upgrade system. Test integrated alternate C2 packaging arrangement. Upgrade the Developmental Test Unit to production representation in order to be used for operational testing. Support the operational testing of the new design in a operational scenario to validate measures of effectiveness and measures of suitability.

FY09: Identify and incorporate changes in the DJC2 test bed based upon lessons learned from fielded systems and operational testing

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)	

(U) B. Accomplishments/Planned Program

Acquisition Documentation Activities	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.900	2.383	1.350	0.800
RDT&E Articles Quantity				

FY06: Analyzed, prepared, and performed Milestone B, In-Process Review (IPR), and Milestone C activities.

FY07: Continue to analyze, prepare, and perform In-Process Review (IPR), and Milestone acquisition activities.

FY08: Continue to analyze, prepare, and perform In-Process Review (IPR), and Milestone acquisition activities.

FY09: Continue to analyze, prepare, and perform In-Process Review (IPR), and Milestone acquisition activities.

Technology Investigation / Requirements definition	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	10.129	0.000	0.000	0.000
RDT&E Articles Quantity				

FY06: Validated technical concepts and technologies for recommendation for inclusion into follow-on increments.

FY07: Not Applicable.

FY08: Not Applicable.

FY09: Not Applicable.

CONOPS Experimentation System	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.979	2.430	0.650	0.450
RDT&E Articles Quantity				

FY06: Began technology refresh and component upgrade for the Continuity Of Operations (CONOPS) Experimentation System at JFCOM

FY07: Complete technology refresh and component upgrade for the CONOPS Experimentation System at JFCOM

FY08: Component upgrade for CONOPS System at JFCOM

FY09: Continue Component upgrade for CONOPS System at JFCOM

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI 2804	27,501	0	0	11,116	11,020	11,520	12,014	12,408	Cont.	Cont.

(U) D. ACQUISITION STRATEGY:

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.

(U) E. METRICS:

Earned Value Management (EVM) is used for metrics reporting and risk management.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**			PROGRAM ELEMENT 0603237N Deployable Joint Command & Control			PROJECT NUMBER AND NAME 3050 Deployable Joint Command & Control (DJC2)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development	VAR	NSWC, Crane, USA, & VAR	15.931	2.430	VAR	0.650	VAR	0.450	VAR	Continuing	Continuing	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	VAR	VAR	37.390	2.116	VAR	2.443	VAR	2.400	VAR	Continuing	Continuing	
Training Development												
Engineering Facility Development	WX	NSWC, CSS	23.945	2.337	VAR	2.000	VAR	1.941	VAR	Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal Product Development			77.266	6.883		5.093		4.791		Continuing	Continuing	
Remarks:												
Development Support												
Software Integration	VAR	NSWC, CSS & VAR	35.149	2.500	VAR	1.000	VAR	1.300	VAR	Continuing	Continuing	
Integrated Logistics Support												
Configuration Management												
Technical Investigations	VAR	NTA & VAR	12.309	1.117	VAR					Continuing	Continuing	
Trade-off Studies & Analyses	VAR	NTA & VAR	9.000							Continuing	Continuing	
GFE												
Award Fees												
Subtotal Support			56.458	3.617		1.000		1.300		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	MPR	46th Test Wing & VAR	7.000	1.000	VAR	1.000	VAR	0.500	VAR	Continuing	Continuing	
Operational Test & Evaluation	VAR	OPTEVFOR & VAR	7.500	1.438	VAR	1.032	VAR	0.607	VAR	Continuing	Continuing	
Live Fire Test & Evaluation												
Test Assets	MPR	Eglin AFB & VAR	3.000	1.000	VAR					Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal T&E			17.500	3.438		2.032		1.107		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VAR	NSWC, CSS & VAR	26.358	2.383	VAR	1.350	VAR	0.800	VAR	Continuing	Continuing	
Travel												
Transportation												
Subtotal Management			26.358	2.383		1.350		0.800		Continuing	Continuing	
Remarks:												
Total Cost			177.582	16.321		9.475		7.998		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	3050 Deployable Joint Command & Control (DJC2)	

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012				2013			
	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
Acquisition Milestones																																				
MILESTONE C			Increment I																																	
FRPDR										Increment I																										
Test & Evaluation Milestones																																				
Development Test			DT											DT																						
Operational Test							OT								OT			OT																		
Production Milestones																																				
Deliveries																																				

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control				PROJECT NUMBER AND NAME 3050 Deployable Joint Command & Control (DJC2)				
Schedule Profile	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MILESTONE C									
INCREMENT I	2Q								
FRPDR									
INCREMENT I			2Q						
TEST AND EVALUATION MILESTONES									
DEVELOPMENTAL TEST	3Q			2Q					
OPERATIONAL TEST		3Q		3Q	2Q				

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603254N, ASW SYSTEMS DEVELOPMENT		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	20.545	25.337	16.706	29.104	13.911	12.640	12.847	13.189
0490 PROJECT BEARTRAP	3.750	3.828	3.605	3.807	3.611	2.318	2.337	2.458
1292 ADV ASW SENSORS & PROC	3.172	3.029	3.287	10.485	10.300	10.322	10.510	10.731
9177 LASH ASW		9.862	9.814	14.812				
9999 CONGRESSIONAL ADD	13.623	8.618						

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

0490. The mission of Project BEARTRAP (CNO Project K-0416) is to provide Sound Pressure Level (SPL) quality recordings of targets of interest and an associated new technology, rapid prototyping mechanism for the application of state-of-the-art collection sensors. The program will develop and rapidly deploy new technology concepts in hardware and software to effectively address emerging littoral threats and to improve the present Undersea Warfare capability in support of Sea Shield/Sea Trial Initiatives. The BEARTRAP Environmental data collection program provides passive and active acoustic and non-acoustic data essential for the design and development of environmental models, sensors, weapons, software algorithms, and tactical decision aids. BEARTRAP employs developmental and prototypical hardware installed in uniquely configured ASW aircraft to collect data of interest, and specially configured ground support facilities to conduct reconstruction and analysis of this data. BEARTRAP includes calibrated recording systems, advanced detection and tracking systems, special sensors, advanced processing systems and techniques and specially derived operational tactics.

1292. This program provides Anti-submarine Warfare (ASW) platform effectiveness through development of advanced hardware and software associated with airborne acoustic systems. This includes sensors, processing, post-processing, data recording and display capabilities to address regional threat scenarios against conventionally and nuclear powered submarines. Key objectives are platform accommodations of advanced active and passive sensors, improved detection, classfication, localization, tracking, and increased capacity and flexibility to handle multi-sensor data loads. Programs being funded during the FYDP will investigate technologies such as: the exploitation of forward scatter, transient signals, and source and receiver improvement technologies that will enhance passive and Multi-Static Active Sensor Systems capabilities. Other programs being funded during the FYDP will provide for the development of technologies that will allow transition from the cued search phase to the localization and attack phase in the harsh shallow water areas. In addition, the program will provide for the development and subsequent experimentation of Multi-Static Active (MSA) sources and receivers with the associated USQ-78B processor.

9177. Planned Navy funding for FY 07-09 will support development, integration, and testing of the Electro-optical Passive ASW System (EPAS) and deliver 8 fieldable prototype systems to demonstrate a 24-hour air ASW capability for fixed wing, helicopter, and UAV ASW platforms in multiple geographic locations and seasonal variations. Expected funding change in FY08/09.
Note: Change in process with OPNAV to re-name 9177 EPAS.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603254N, ASW SYSTEMS DEVELOPMENT

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:	18.944	16.782	15.108	27.132
Current President's Budget:	20.545	25.337	16.706	29.104
Total Adjustments	1.601	8.555	1.598	1.972

Summary of Adjustments				
Congressional Reductions	-0.116			
Congressional Rescissions				
Congressional Undistributed Reductions	-0.282	-0.095		
Congressional Increases		8.650		
Economic Assumptions			0.038	0.435
Miscellaneous Adjustments	1.999		1.560	1.537
Subtotal	1.601	8.555	1.598	1.972

Schedule:

0490. AQL was renamed Tactical Acoustic Processor (TAPS) in FY05 at IOC. Schedule includes increased R&D Articles for Active Target Strength (TS) Processing development and Prototype T.S. Processor.

1292. FY11 added milestone for Concurrent Processing. Schedule updated to show milestones for FY12 and FY13.

9177. FY06 Congressional Plus-Ups now under 9999. All efforts previously reflected for FY06 have been removed.

Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 0490, PROJECT BEARTRAP	

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0490 PROJECT BEARTRAP	3.750	3.828	3.605	3.807	3.611	2.318	2.337	2.458
RDT&E Articles Qty	12	10	3	2	4	3	3	3

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:
0490. The mission of Project BEARTRAP (CNO Project K-0416) is to provide SPL quality recordings of targets of interest and an associated new technology, rapid prototyping mechanism for the application of state-of-the-art collection sensors. The program will develop and rapidly deploy new technology concepts in hardware and software to effectively address emerging littoral threats and to improve the present Undersea Warfare capability in support of Sea Shield/Sea Trial Initiatives. The BEARTRAP Environmental data collection program provides passive and active acoustic and non-acoustic data essential for the design and development of environmental models, sensors, weapons, software algorithms, and tactical decision aids. BEARTRAP employs developmental and prototypical hardware installed in uniquely configured ASW aircraft to collect data of interest, and specially configured ground support facilities to conduct reconstruction and analysis of this data. BEARTRAP includes calibrated recording systems, advanced detection and tracking systems, special sensors, advanced processing systems and techniques and specially derived operational tactics. The 40 RDT&E articles consist of aircraft calibration units, SPL collection suites, and post mission processors that will support the collection mission.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Systems Engineering / Aircraft mods, commence Active Acoustic program	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	3.022	3.103	2.835	3.057
RDT&E Articles Qty	12	10	3	2

Systems Engineering: Integration of SPL Suite (Digital Recording), Post mission processor upgrade, and aircraft calibration unit enhancements for active target strength. Engineering development of Target Strength processing and prototype processor.

Data Collection and Analysis	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.728	.725	.770	.750
RDT&E Articles Qty				

Data Collection support at Operational Wings. Ongoing collection of high interest acoustic and non-acoustic data in support of Measurement/Measuring and Signature Intelligence (MASINT)/Office of Naval Intelligence (ONI) threat assessment requirements, Reduction, Analysis and Fleet Rapid Feedback. Conduct airborne special operations support. Essential performance modeling and evaluation for advanced technology sensor systems design and Fleet tactics development.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 0490, PROJECT BEARTRAP

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Line item No. and Name										
Related RDT&E										
(U) PE 0603747N (Advanced Undersea Warfare Technology)										
(U) PE 0604212N (ASW and Other Helicopter Developments)										
(U) PE 0604221N (P-3 Modernization Program)										
(U) PE 0604261N (Acoustic Search Sensors)										

D. ACQUISITION STRATEGY: BEARTRAP is a CNO Special Project. The included technology developments are primarily in-house with contractor participation through existing vehicles.

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4		PROGRAM ELEMENT 0603254N, ASW SYSTEMS DEVELOPMENT				PROJECT NUMBER AND NAME 0490, PROJECT BEARTRAP						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Ancillary Hdw Development	VARIOUS	VARIOUS	2.599	.700	10/06	.770	10/07	.750	10/08	1.957	6.776	
Systems Engineering	WX	NAWCAD, PATUXENT RIVER MD	62.473	3.103	10/06	2.835	10/07	3.057	10/08	8.767	80.235	
SUBTOTAL PRODUCT DEVELOPMENT			65.072	3.803		3.605		3.807		10.724	87.011	

Remarks:

SUPPORT												
SUBTOTAL SUPPORT												

Remarks:

TEST & EVALUATION												
SUBTOTAL TEST & EVALUATION												

Remarks:

MANAGEMENT												
Travel	TO	NAVAIR HQ, PAXTUXENT RIVER MD	.070	.025	10/06						.095	
SUBTOTAL MANAGEMENT			.070	.025							.095	

Remarks:

Total Cost			65.142	3.828		3.605		3.807		10.724	87.106	

Remarks:

EXHIBIT R4, Schedule Profile

Data Collection and Analysis/ Prototype & Installation

DATE: February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N / BA-4	0603254N, ASW SYSTEMS DEVELOPMENT	0490, PROJECT BEARTRAP

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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																																
Systems Engineering																																
P-3 Avionics Suite		(5)		(5)		(4)		(4)											(1)				(1)				(1)				(1)	
HSL Suite																																
Tactical Acoustic Processor(TAPS)		(2)				(1)				(1)				(1)				(1)				(1)				(1)				(1)		
T.S Processor Development/Prototype								(1)				(2)			(1)				(2)				(1)				(1)				(1)	
Test & Evaluation Milestones																																
Production Milestones																																
Product Development Data Collection/Analysis	Continuous																															
Deliveries																																
P-3 Avionics		(5)		(5)		(4)		(4)											(1)				(1)				(1)				(1)	
Tactical Acoustic Processor		(2)				(1)				(1)				(1)				(1)				(1)				(1)				(1)		
T.S. Processor								(1)				(2)			(1)				(2)				(1)				(1)				(1)	

CLASSIFICATION:

Exhibit R-4a, Schedule Detail Data Collection and Analysis/ Prototype & Installation						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603254N, ASW SYSTEMS DEVELOPMENT				PROJECT NUMBER AND NAME 0490, PROJECT BEARTRAP			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Sys. Eng. Avionics Suite	1Q-4Q	1Q-4Q			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Sys. Eng. HSL Suite	1Q-4Q							
Sys. Eng. Tactical Acoustic Processor	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Target Strength Processor Development		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Data Collection and Analysis	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Deliveries								
P-3 Avionics	2Q and 4Q	2Q and 4Q			3Q	3Q	3Q	3Q
Tactical Acoustic Processor	2Q	2Q	2Q	2Q	2Q	2Q	2Q	2Q
TS Processor		4Q	4Q	3Q	3Q	3Q	3Q	3Q

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 1292, ADV ASW SENSORS & PROC	

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
1292 ADV ASW SENSORS & PROC	3.172	3.029	3.287	10.485	10.300	10.322	10.510	10.731
RDT&E Articles Qty			100	350	350	350	350	350

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides Anti-submarine Warfare (ASW) platform effectiveness through development of advanced hardware and software associated with airborne acoustic systems. This includes sensors, processing, post-processing, data recording and display capabilities to address regional threat scenarios against conventional and nuclear powered submarines. Key objectives are platform accommodations of advanced active and passive sensors, improved detection, classification, localization, tracking, and increased capacity and accommodations to handle multi-sensor data loads. Programs being funded during the FYDP will investigate technologies such as: the exploitation of forward scatter, transient signals, and source and receiver improvement technologies that will enhance passive and Multi-Static Active Sensor Systems capabilities. Other programs being funded during the FYDP will provide for the development of technologies that will allow transition from the cued search phase to the localization and attack phase in the harsh shallow water areas, will allow for automation of concurrent active and passive processing, and make improvements in battery technology. In addition, the program will provide for the development and subsequent experimentation of Multi-Static Active (MSA) sources and receivers with the associated USQ-78B processor. The 1850 test articles, which consist of passive/active sensors and associated processors, will support at sea trials and experiments.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Reassess loc/attack capabilities in shallow water	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub - total Cost	3.172	3.029	3.287	10.485
RDT&E Articles Qty			100	350

Reassessing localization and attack capabilities in shallow water areas. System performance assessments for multi-static ASW algorithms and system enhancements. Field test assessment for forward scatter. System performance assessment for multi-static active source and receivers technologies.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 1292, ADV ASW SENSORS & PROC

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Line item No. and Name										
Related RDT&E										
(U) PE 0602314N (Undersea Surveillance and Weapons Technology)										
(U) PE 0604261N (Acoustic Search Sensors)										

D. ACQUISITION STRATEGY: The included technology developments are primarily in-house with contractor participation through existing vehicles.

Exhibit R-3 Cost Analysis (page 1)

DATE: February 2007

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

PROGRAM ELEMENT: 0603254N, ASW SYSTEMS DEVELOPMENT

PROJECT NUMBER AND NAME: 1292, ADV ASW SENSORS & PROC

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hardware Development	TBD	TBD						.500	10/08	1.450	1.950	1.950
SUBTOTAL PRODUCT DEVELOPMENT								.500		1.450	1.950	

Remarks:

SUPPORT												
Software Development	WX	NAWCAD, PATUXENT RIVER MD		.500	10/06	.500	10/07	2.000	10/08	9.806	12.806	
Studies & Analyses	WX	NAWCAD, PATUXENT RIVER MD						4.582	10/08	17.405	21.987	
Studies & Analyses	VARIOUS	VARIOUS	.500								.500	.500
SUBTOTAL SUPPORT			.500	.500		.500		6.582		27.211	35.293	

Remarks:

TEST & EVALUATION												
Dev Test & Eval	VARIOUS	VARIOUS	13.481	.500	10/06	.450	10/07	1.000	10/08	3.250	18.681	18.681
SUBTOTAL TEST & EVALUATION			13.481	.500		.450		1.000		3.250	18.681	

Remarks:

MANAGEMENT												
Contractor Engineering Support	VARIOUS	VARIOUS	5.276	.060	10/06						5.336	5.336
Gov Eng Support	WX	NAWCAD, PATUXENT RIVER MD	40.760	1.509	10/06	1.953	10/07	1.288	10/08	5.371	50.881	
Program Management Support (Co	VARIOUS	VARIOUS	2.072	.220	10/06	.100	10/07	.312	10/08	1.278	3.982	3.982
Program Management Support (Go	WX	NAWCAD, PATUXENT RIVER MD	7.191	.230	10/06	.234	10/07	.728	10/08	2.983	11.366	
Travel	TO	NAVAIR HQ, PAXTUXENT RIVER MD	.020	.010	10/06	.050	10/07	.075	10/08	.320	.475	
SUBTOTAL MANAGEMENT			55.319	2.029		2.337		2.403		9.952	72.040	

Remarks:

Total Cost			69.300	3.029		3.287		10.485		41.863	127.964	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile
ADVANCED DICASS

DATE: February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N / BA-4	0603254N, ASW SYSTEMS DEVELOPMENT	1292, ADV ASW SENSORS & PROC

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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										Coherent Sound processing Decision																						
Performance Assessment						Coherent sound processing								Multi-Static Target Recognition								Concurrent Processing								Battery Technology		
System Development																																
Transition Decision					Localization & Attack								Coherent sound processing								Multi-Static Target Recognition								Concurrent Processing			
Software Experiment/Exercise Participation																																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIPII FY 06																																
FRP FY07																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail ADVANCED DICASS						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603254N, ASW SYSTEMS DEVELOPMENT				PROJECT NUMBER AND NAME 1292, ADV ASW SENSORS & PROC			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Performance Assessment		1Q		1Q		1Q		1Q
Transition Decision	4Q		4Q		4Q		4Q	
Experiment/Exercise Participation				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 9177, LASH ASW

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
9177 LASH ASW		9.862	9.814	14.812				
RDT&E Articles Qty		2	2	4				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Planned Navy funding for FY 07-09 will support development, integration, and testing of the Electro-optical Passive ASW System (EPAS) and deliver 8 fieldable prototype systems to demonstrate a 24-hour air ASW capability for fixed wing, helicopter, and UAV ASW platforms in multiple geographic locations and seasonal variations.
Note: Change in process with OPNAV to re-name 9177 EPAS.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Complete Development / Demo of EPAS Turret	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost		9.862	9.814	14.812
RDT&E Articles Qty		2	2	4

This effort supports improvement in AIR ASW capability. Complete EPAS turret for demonstration of the EPAS ASW technology. Planned Navy funding for FY07-FY09 will continue demonstration of the EPAS technology.

C. OTHER PROGRAM FUNDING SUMMARY:

Line item No. and Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Related RDT&E										
(U) PE 0602314N (Undersea Surveillance and Weapons Technology)										
(U) PE 0604261N (Acoustic Search Sensors)										

D. ACQUISITION STRATEGY: Sole source modification to the existing contract with BAE to add Navy funded system demonstration.

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4		PROGRAM ELEMENT 0603254N, ASW SYSTEMS DEVELOPMENT				PROJECT NUMBER AND NAME 9177, LASH ASW						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Primary Hdw Development	C-CPFF	BAE SYSTEMS CONTROLS INC., JOHNSON	3.300	7.500	12/06	7.500	12/07	9.500	12/08		27.800	27.800
SUBTOTAL PRODUCT DEVELOPMENT			3.300	7.500		7.500		9.500			27.800	

Remarks:

SUPPORT												
SUBTOTAL SUPPORT												

Remarks:

TEST & EVALUATION												
Dev Test & Eval	VARIOUS	VARIOUS		1.569	11/06	1.382	11/07	4.308	11/08		7.259	
SUBTOTAL TEST & EVALUATION				1.569		1.382		4.308			7.259	

Remarks:

MANAGEMENT												
Government Engineering Support	WX	NAWCAD, PATUXENT RIVER MD	.616	.563	11/06	.666	11/07	.732	11/08		2.577	
Program Management Support (Co	VARIOUS	VARIOUS	3.615	.200	11/06	.206	11/07	.208	11/08		4.229	4.229
Travel	TO	NAVAIR HQ, PAXTUXENT RIVER MD		.030		.060		.064			.154	
SUBTOTAL MANAGEMENT			4.231	.793		.932		1.004			6.960	

Remarks:

Total Cost			7.531	9.862		9.814		14.812			42.019	

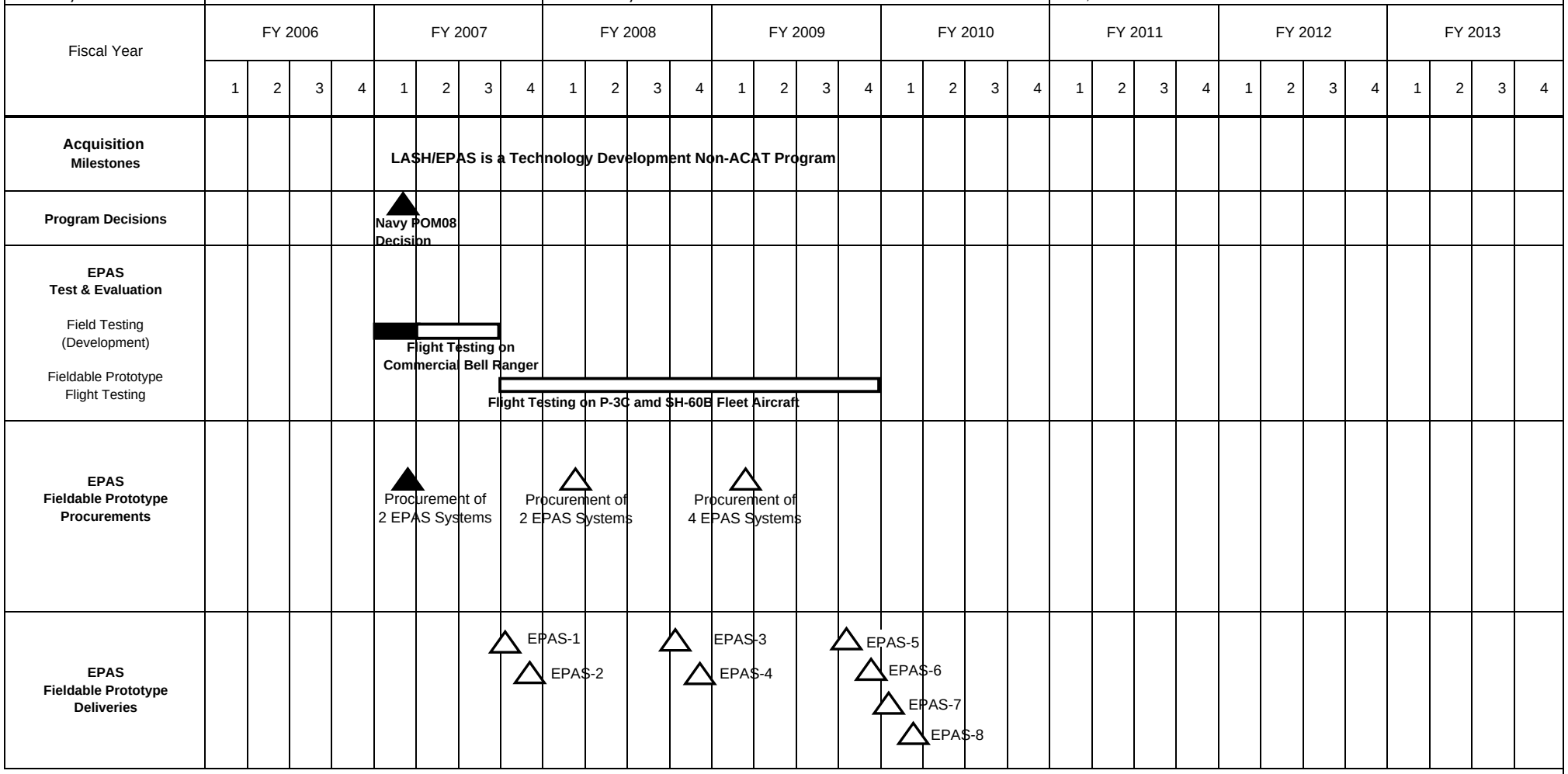
Remarks: Total PY Cost includes FY04 and FY05 Congressional Adds.

CLASSIFICATION: UNCLASSIFIED

EXHIBIT R4, Schedule Profile
LASH/EPAS

DATE: February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603254N, LASH ASW SYSTEMS DEVELOPMENT**	9177, LASH ASW



CLASSIFICATION:

Exhibit R-4a, Schedule Detail LASH/EPAS						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603254N, ASW SYSTEMS DEVELOPMENT				PROJECT NUMBER AND NAME 9177, LASH ASW			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Navy Funding Decision								
POM Decision		1Q						
Field Testing (Development)		1Q - 3Q						
Fieldable Prototype Flight Testing		4Q	1Q - 4Q	1Q - 4Q				
Fieldable Prototype Procurement		1Q	1Q	1Q				
Fieldable Prototype Deliveries		4Q	4Q	4Q	1Q			

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603254N, ASW SYSTEMS DEVELOPMENT	PROJECT NUMBER AND NAME 9999, Congressional Adds	

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
9999 Congressional Adds	13.623	8.618						
RDT&E Articles Qty - N/A								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

9999. Congressional Adds.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

9177C	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	9.221	6.675		
RDT&E Articles Qty				

Electro-optic Passive ASW (EPAS). Continue development, demonstration, and evaluation of EPAS technology for ASW applications. This effort supports improvement in Air ASW capability.

9512C	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	3.444	1.943		
RDT&E Articles Qty				

Tactical E-Field Buoy Development. Continue development and testing of an air deployable tactical electric field buoy system to detect the electric field (E-Field) signal produced by a submarine.

9746N	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.958			
RDT&E Articles Qty				

Lithium Battery Sonobuoy Packs. Congressional Plus Up transferred to NAVSEA funding line.

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603261N, TACTICAL AIRBORNE RECONNAISSANCE		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	3.882	3.944	4.063	4.308	4.324	4.371	4.458	4.548
2467 UAV CONOPS	3.882	3.944	4.063	4.308	4.324	4.371	4.458	4.548

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:
The Naval Unmanned Aerial Vehicle (UAV) Strategy employs a family of UAVs to perform tactical, persistent and penetrating Intelligence, Survelliance, 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.
- Develops Intelligence, Surveillance, and Reconnaissance (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.
- Develops Tactics, Techniques, and Procedures for multi- dissimilar UAV control, operations, and data dissemination utilizing NATO STANAG 4586.
- Conducts studies for UAV task, data management, and Focused Flying efforts.
- Conducts CONOPS studies, demonstrations, and exercises for data relay, comm relay, time sensitive targets, and weapons employment.
- Purchase a UAV CONOPS demonstration system to be utilized for CONOPS development, test and evaluation, and expediting technology transition. The demonstration system consists of a ground control station, launch and recovery equipment, air vehicles, spares and associated equipment.

B. PROGRAM CHANGE SUMMARY

Previous President's Budget:	3.879	3.959	4.158	4.303
Current President's Budget:	3.882	3.944	4.063	4.308
Total Adjustments	0.003	-0.015	-0.095	0.005
Summary of Adjustments				
Congressional Reductions		-0.015		
Congressional Rescissions				
Congressional Increases	0.003			
Economic Assumptions			-0.015	0.022
Miscellaneous Adjustments			-0.080	-0.017
Subtotal	0.003	-0.015	-0.095	0.005

Schedule:
Comm Relay, targeting, management of multiple UAVs, data management, and other tasks added to clarify scope of CONOPS efforts. UAV CONOPS demonstration system will be purchased to conduct studies, demonstrations, and exercises. CVW-XX Operational Testing reduced to one per FY due to availability of Carrier Strike Group ships and aircraft.

Technical:
Not Applicable

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2467 UAV CONOPS	3.882	3.944	4.063	4.308	4.324	4.371	4.458	4.548
RDT&E Articles Qty			1					

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.
- 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.
- Develops Tactics, Techniques, and Procedures for multi-dissimilar UAV control, operations, and data dissemination utilizing NATO STANAG 4586.
- Conducts studies for UAV task, data management, and Focused Flying efforts.
- Conducts CONOPS studies, demonstrations, and exercises for data relay, comm relay, time sensitive targets, and weapons employment.
- Purchase a UAV CONOPS demonstration system to be utilized for CONOPS development, test and evaluation, and expediting technology transition. The demonstration system consists of a ground control station, launch and recovery equipment, air vehicles, spares and associated equipment.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

STUDIES AND DEMONSTRATIONS	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.700	.700	1.787	1.800
RDT&E Articles Qty			1	

Studies and Demonstrations to develop CONOPS for manned-unmanned integration of UAV and aircraft systems. Purchase a UAV CONOPS demonstration system for CONOPS development, test and evaluation, and technology transition.

SHIPBOARD CONOPS	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.345	1.410	1.241	1.281
RDT&E Articles Qty				

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

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N, TACTICAL AIRBORNE RECONNAISSANCE	PROJECT NUMBER AND NAME 2467 UAV CONOPS

ENGINEERING AND PROGRAM SUPPORT	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.887	.884	.910	1.012
RDT&E Articles Qty				

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

NATO STANAG 4586 AND INTEROPERABILITY	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.950	.950	.125	.215
RDT&E Articles Qty				

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

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY:
Not Applicable

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4		PROGRAM ELEMENT 0603261N, TACTICAL AIRBORNE RECONNAISSANCE				PROJECT NUMBER AND NAME 2467 UAV CONOPS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Ship Integration	VARIOUS	VARIOUS	1.841	.845	Nov 2006	1.000	Nov 2007	1.000	Nov 2008	Continuing	Continuing	
Systems Engineering Test Tool	WX	NAWCAD, PATUXENT RIVER MD	.664	.580	Nov 2006	.241	Nov 2007	.281	Nov 2008	Continuing	Continuing	
SUBTOTAL PRODUCT DEVELOPMENT			2.505	1.425		1.241		1.281		Continuing	Continuing	

Remarks:

SUPPORT												
Development/Demo Support	WX	VARIOUS	11.371	.400	Dec 2006	.600	Dec 2007	.700	Dec 2008	Continuing	Continuing	
Software Development	C/CPFF	RAYTHEON COMPANY FALLS CHURCH VA	2.250	.785	Dec 2006					4.094	8.894	8.894
Studies & Analysis	WX	NAWCAD, PATUXENT RIVER MD		.150	Dec 2006	.500	Dec 2007	.500		Continuing	Continuing	
Studies, Demo & Analysis	WX	NAWCWD, CHINA LAKE CA	.150	.150	Dec 2006	.687	Dec 2007	.600	Dec 2008	Continuing	Continuing	
SUBTOTAL SUPPORT			13.771	1.485		1.787		1.800		Continuing	Continuing	

Remarks:

TEST & EVALUATION												
Interoperability Testing	VARIOUS	VARIOUS	.650	.150	Dec 2006	.125	Dec 2007	.215	Dec 2008	Continuing	Continuing	
SUBTOTAL TEST & EVALUATION			.650	.150		.125		.215		Continuing	Continuing	

Remarks:

MANAGEMENT												
Government Eng Sup	VARIOUS	VARIOUS	1.934	.300	Dec 2006	.477	Dec 2007	.611	Dec 2008	Continuing	Continuing	
Program Management Support	VARIOUS	VARIOUS	.588	.484	Dec 2006	.333	Dec 2007	.301	Dec 2008	Continuing	Continuing	
Travel	TO	NAVAIR HQ, PATUXENT RIVER MD	.188	.100	Oct 2006	.100	Oct 2007	.100	Oct 2008	Continuing	Continuing	
SUBTOTAL MANAGEMENT			2.710	.884		.910		1.012		Continuing	Continuing	

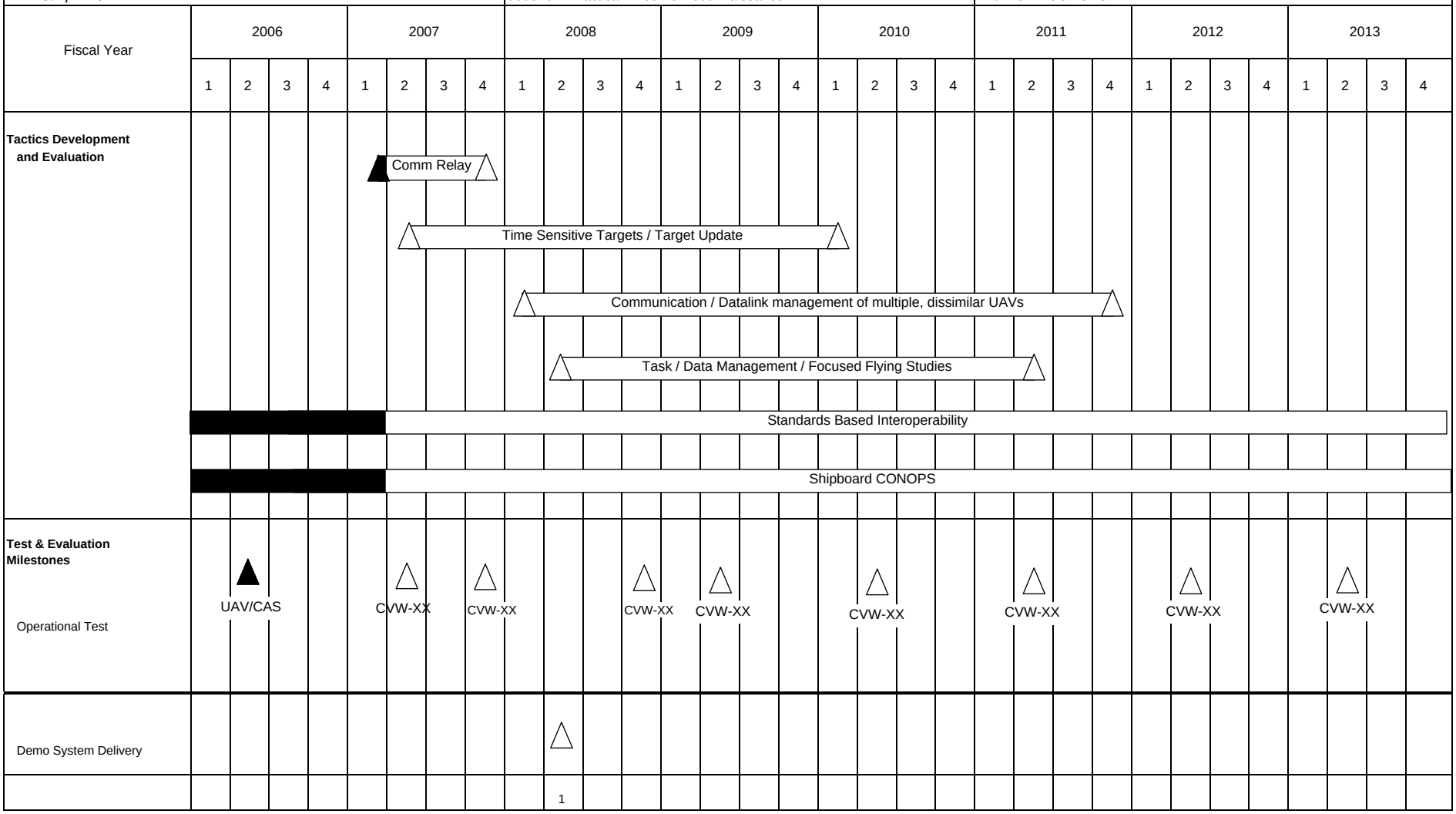
Remarks:

Total Cost			19.636	3.944		4.094		4.308		Continuing	Continuing	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603261N Tactical Airborne Reconnaissance	2467 UAV CONOPS	



R-1 SHOPPING LIST - Item No. 31

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603261N Tactical Airborne Reconnaissance				PROJECT NUMBER AND NAME 2467 UAV CONOPS			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Tactics Development & Evaluation:								
Standards based Interoperability	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Shipboard CONOPS	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Comm Relay		1Q-4Q						
Time Sensitive Targets/Target Update		2Q-4Q	1Q-4Q	1Q-4Q	1Q			
Communication / Datalink management of multiple, dissimilar UAVs			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Task/Data Management/Focused Flying Studies			2Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q		
Test & Evaluation:								
UAV/Close Air Support (CAS)	2Q							
CVW-XX		2Q,4Q	4Q	2Q	2Q	2Q	2Q	2Q
Delivery of Demonstration System			2Q					

R-1 SHOPPING LIST - Item No. 31

EXHIBIT R-2, RDT&E Budget Item Justification (page 1)

February 2007

APPROPRIATION/BUDGET ACTIVITY
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /BA-4

R-1 ITEM NOMENCLATURE
PE 0603382N Advanced Combat System Technology

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**30.434**	**12.319**	**9.331**	**9.586**	**10.321**	**12.288**	**12.299**	**10.320**
0324/Advanced Combat System Technology	**26.619**	**12.319**	**9.331**	**9.586**	**10.321**	**12.288**	**12.299**	**10.320**
9999/Congressional Adds	**3.815**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The 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. A priority is the design of the flow and display of tactical information through the "detect-control-engage" process to provide decision quality information.

Project Unit 0324: Funding is included to ensure all Naval systems, family of systems, and programs move to modular Open Architectures (OA) in accordance with DoDD 5000.1 dated 12 May 2003 which mandates all DoD programs to utilize open systems architecture in order to rapidly field affordable, interoperable systems. By direction of the Navy SAE, PEO IWS is assigned overall responsibility and authority to direct the Navy's OA effort which this project supports. This effort establishes acquisition strategies, develops guidance, and develops analysis of alternatives to determine OA software reuse practices within and across all Navy Communities of Interest (COI - surface, subsurface, air, space, and C4I). This project also works closely with the Test and Evaluation (T&E) and ertification communiities in defining regression testing and certification requirements for all OA Commercial Off-the-Shelf upgrades and software reuse applications. Ultimately, this project works to identify cross-domain/COI components for cost reduction and reuse throughout the whole Navy. 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. This Naval OA project 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.

Funding includes FY06 congressional adds for the advanced combat system technology, the high pressure pure air generator and for the development of the multiview data standards for the integrated digital environment.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 Pres Controls)	33.605	12.398	22.591	23.259
Current President's Budget: (FY08/09 Pres Controls)	30.434	12.319	9.331	9.586
Total Adjustments	-3.171	-0.079	-13.260	-13.673
Summary of Adjustments:				
Program Adjustment	0.000	0.000	-12.500	-13.000
Misc. Changes			-0.760	-0.673
Undistributed General Reductions	-0.147	-0.079		
Congressional Action	-0.024	0.000	0.000	0.000
Reprogramming	-3.000	0.000	0.000	0.000
Subtotal	-3.171	-0.079	-13.260	-13.673

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification (page 2)		**February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604307N/ 1447 (AEGIS Surf Combatant Combat Sys Imp)	197.233	140.669	142.810	132.101	158.783	137.595	104.669	98.572	CONT.	1112.432
PE 0604755N/ 2178 (Ship Self Defense System)	47.364	3.521	26.772	31.042	25.377	30.999	33.644	34.358	0.00	233.077
PE 0603582N/ 0164 (Common Network Integration)	23.155	25.428	14.890	13.892	0.000	0.000	0.000	0.000	CONT.	77.365
PE 0603658N/2039 (Cooperative Engagement Capability)	82.607	53.138	33.283	39.174	49.412	46.444	46.727	47.039	CONT.	397.824

D. ACQUISITION STRATEGY:

Risk reduction efforts are lead and coordinated by NSWC/Dahlgren, the Open Architecture (OA) Technical Authority for PEO IWS 1.0. 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 NSWCDD 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.

E. MAJOR PERFORMERS:

NSWC/ Dahlgren - Dahlgren, Virginia - Technical Authority for OA Program for PEO IWS
NSWC/Crane, Carderock, & ALION- Program Management Support
NUWC/Newport-OA Domain Support
NAVAIR - OA Domain Support
Industry: IBM, ANGLE
SPAWAR-OA Domain Support
MITRE & SEI-FFRDC

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification		February 2007
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

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.192	1.689	1.318	1.353
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, 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.682	1.154	0.945	0.948
RDT&E Articles Quantity				

OA Enterprise Communications and Training –This funding supports the activities to enable the cultural adoption of OA principles 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.975	4.530	2.922	3.611
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.

EXHIBIT R-2a, RDT&E Budget Item Justification		February 2007
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

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	9.578	4.111	3.396	2.959
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 program 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 challenge 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.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.192	0.835	0.750	0.715
RDT&E Articles Quantity				

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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

February 2007

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

PROGRAM ELEMENT: 0603382N

PROJECT NUMBER AND NAME: 0324 Advanced Combat System Technology

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	0.250	0.550	04/06	0.200	11/06	0.200	12/07	0.225	10/08	0.000	0.000	
Systems Engineering	WX	NSWC / Dahlgren, VA	16.302	5.891		1.996		1.230		1.252		Continuing	Continuing	
Systems Engineering	CPAF	Lockheed Martin, NJ	25.467	0.000		0.000		0.000		0.000				
Systems Engineering	WR	NSWC Indian Head	0.000	0.000		0.156		0.000		0.000		0.000	0.156	
Systems Engineering	WX	NSWC/CRANE & Carderock	0.395	0.803		0.720		0.320		0.320				
Systems Engineering	WX	NSMA Arlington, VA	2.410	0.000		0.000		0.000		0.000				
Systems Engineering	WX/CPAF	Miscellaneous	0.500	2.695		0.732		1.247		1.267				
OA DOMAIN SUPPORT	WX	NUWC/Newport, Spawar, Navair	1.838	8.121		3.790		3.540		3.711				
Award Fees	CPAF	Lockheed Martin, NJ	3.779	0.000		0.000		0.000		0.000				
Subtotal Product Development			50.941	18.060		7.594		6.537		6.775		Continuing	Continuing	

Remarks:

Development Support													0.000	
Software Development	WX	MITRE,SEI	0.310	0.309		0.000		0.000		0.000				
Industry Development	CPFF	IBM, ANGLE	3.028	2.799	02/06	2.300	11/06	0.753	11/07	0.753	10/08			
Integrated Logistics Support														
Configuration Management														
Technical Data-Academia	WR	NPS-Monterey/DAU	0.400	0.500		0.548		0.184		0.184				
Addvisory Engineering Support-SAG	CPAF	Miscellaneous	0.177	0.000		0.000		0.000		0.000				
Award Fees														
Subtotal Support			3.915	3.608		2.848		0.937		0.937		Continuing	Continuing	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603382N	0324 Advanced Combat System Technology

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	4.618	1.174		1.042		1.107		1.159				
OA Asset Repository(SBIR Account)	WX	Miscellaneous	0.800	0.150		0.000		0.000		0.000				
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			5.418	1.324		1.042		1.107		1.159		0.000	10.050	

Remarks:

Contractor Engineering Support			0.000											
Government Engineering Support														
Program Management Support	CPAF	Miscellaneous	1.200	1.192	06/06	0.835	11/06	0.750	11/07	0.715	11/08	Continuing	Continuing	
Travel														
Labor (Research Personnel)														
SBIR Assessment(Cong Add)			0.000	2.435		0.000		0.000		0.000				
Subtotal Management			1.200	3.627		0.835		0.750		0.715		Continuing	Continuing	

Remarks:

Total Cost			61.474	26.619		12.319		9.331		9.586		Continuing	Continuing	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile	**DATE: February 2007**
APPROPRIATION/BUDGET ACTIVITY/PROGRAM ELEMENT NUMBER AND NAME **RDT&E, N /BA-4** 0603382N Advanced Combat System Technology	PROJECT NUMBER AND NAME 0324/Advanced Combat System Technology

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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																																
Naval OA/FN Technical Stds		06-1 DSIR Update		06-2 DSIR Update		07-1 DSIR Update		07-2 DSIR Update		08-1 DSIR Update		08-2 DSIR Update		09-1 DSIR Update		09-2 DSIR Update		10-1 DSIR Update		10-2 DSIR Update		11-1 DSIR Update		11-2 DSIR Update		12-1 DSIR Update		12-2 DSIR Update		13-1 DSIR Update		13-2 DSIR Update
OA/FN Design Guidance Alignment Documentation Update				07 Design Guidance				08 Design Guidance				09 Design Guidance				10 Design Guidance				11 Design Guidance				12 Design Guidance				13 Design Guidance(DG)				14 DG
OA Enterprise Asset Repository				07 Repository Update				08 Repository Update				09 Repository Update				10 Repository Update				11 Repository Update				12 Repository Update				13 Repository Update (RU)				14 RU
Test & Evaluation Milestones																																
OA/FN Risk Reduction Experiment Assess and Test OA Components Implementation				06 Experiment		07-1 Exp		07-2 Exp		08-1 Exp		08-2 Exp		09-1 Exp		09-2 Exp		10-1 Exp		10-2 Exp		11-1 Exp		11-2 Exp		12-1 Exp		12-2 Exp		13-1 Exp		13-2 Exp
Production Milestones																																
Deliveries																																

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail								**February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603382N Advanced Combat System Technology				PROJECT NUMBER AND NAME 0324 Advanced Combat System Technology			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY2011	FY 2012	FY 2013
Naval OA/FN Technical Stds Profiles	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q
OA/FN Design Guidance Documentation Update	4Q	4Q	4Q	4Q	4Q	4Q	4Q	4Q
OA Enterprise Assett Repository Updates	4Q	4Q	4Q	4Q	4Q	4Q	4Q	4Q
OA FN Risk Reduction Experiments	4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q	2,4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603382N Advanced Combat System Technology	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9796N				
Advanced Combat System Technology	0.958			

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 second source	1.380			

High Pressure pure air generator development.

	FY 06			
9798N				
Multiview data standards for the integrated digital env	1.477			

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.

EXHIBIT R-2, RDT&E Budget Item Justification										DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**						R-1 ITEM NOMENCLATURE 0603502N/Surface and Shallow Water Mine Countermeasure					
COST ($ in Millions)	Prior Years Cost	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Total PE Cost	**990.010**	**148.298**	**116.124**	**91.122**	**103.798**	**123.208**	**129.548**	**146.550**	**176.709**	**Continuing**	**Continuing**
Remote Minehunting System / 0260	**344.431**	**36.946**	**5.604**	**0.000**	**0.000**	**25.612**	**25.908**	**33.531**	**34.124**	**Continuing**	**Continuing**
Mine Counter Measures Mid-Life Upgrades / 1233	**76.865**	**13.568**	**19.367**	**28.304**	**25.302**	**15.848**	**14.129**	**20.652**	**25.684**	**Continuing**	**Continuing**
Unmanned Underwater Vehicle / 2094	**359.711**	**52.953**	**25.228**	**13.026**	**21.811**	**28.682**	**40.297**	**53.482**	**77.456**	**Continuing**	**Continuing**
Assault Breaching System / 2131	**206.214**	**26.746**	**35.742**	**35.194**	**44.019**	**30.404**	**29.443**	**18.881**	**14.056**	**Continuing**	**Continuing**
Low Frequency Broadband / 3102	**0.000**	**7.464**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**7.464**
SMCM UUV / 3123	**0.000**	**1.027**	**10.785**	**7.744**	**12.666**	**22.662**	**19.771**	**14.931**	**20.330**	**Continuing**	**Continuing**
Expendable Mine Neutralization System / 4025	**1.825**	**8.214**	**13.222**	**6.854**	**0.000**	**0.000**	**0.000**	**5.073**	**5.059**	**Continuing**	**Continuing**
BPAUV / 9513 *	**0.964**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.964**
9999 Congressional Add	**0.000**	**1.380**	**6.176**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**7.556**
Quantity of RDT&E Articles											**0.000**

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

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 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.

* Congressional plus-up of the Surface Navy Inegrated Undersea Tactical Technology (SNIUTT) was used to develop an AN/SQQ-32, 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).

* 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.

(U) B. JUSTIFICATION FOR BUDGET ACTIVITY:

This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental testing related to specific ship or aircraft applications.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4**	R-1 ITEM NOMENCLATURE **0603502N/Surface and Shallow Water Mine Countermeasure**

(U) B. PROGRAM CHANGE SUMMARY:

(U) B. PROGRAM CHANGE SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY07 Pres. Controls)	118.682	130.265	131.401	127.034
Current BES/Presidents Budget (FY08/09 Pres. Controls)	148.298	116.124	91.122	103.798
Total Adjustments	29.616	-14.141	-40.279	-23.236
Summary of Adjustments:				
Congressional Undistributed Reductions	0.109	-0.441	0.000	0.000
Program Adjustment	29.507	-13.700	-40.279	-23.236
Subtotal	29.616	-14.141	-40.279	-23.236

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**344.431**	**36.946**	**5.604**	**0.000**	**0.000**						
RDT&E Articles Qty	**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).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	0260 Remote Minehunting Systems	

(U) B. Accomplishments/Planned Program

Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.291	0.000	0.000	0.000
RDT&E Articles Quantity				

Provide System and Hardware Engineering fixes for Issue Resolutions.

Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	12.968	0.000	0.000	0.000
RDT&E Articles Quantity				

RMS tasking includes address and close 159 reliability and suitability issues. Software certification. Conduct DT/OT training. Update Integrated Electronic Technical Manual (IETM) in support of Operational Assessment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	0260 Remote Minehunting Systems

(U) B. Accomplishments/Planned Program

T&E	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	15.399	5.104	0.000	0.000
RDT&E Articles Quantity				

Conduct Regression Test, End to End software Longevity Test, Pre-dives Suitability Test, In-water Realiability Test, Regression Test, and Operational Assessment.

Conduct TECHEVAL and OPEVAL.

Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.288	0.500	0.000	0.000
RDT&E Articles Quantity				

Support completion of above test events and SW Certification. Develop documentation in support of 2nd LRIP Decision. Continue development of ILS & supportability products and engineering support. Travel.

TOTAL	**36.946**	**5.604**	**0.000**	**0.000**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	0260 Remote Minehunting Systems	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
2622 / OPN (LV064, LV830, LV900)										
RMS	55.289 *	0.000	2.665	3.236						
(U) RDT&E, PE 0604373N, 0529	6.635	10.924	5.184	2.510						

* Note: FY06 control includes $28M that was reprogrammed to 0603502N/0260 via the FY06 Omnibus.

(U) D. ACQUISITION STRATEGY:

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), was awarded as a sole source contract to Lockheed Martin in 2002. MS C on 1 July 2005 authorized procurement of three (3) LRIPs in FY05. Conducted Operational Assessment in August 2006 to support FY06 (2nd) LRIP Decision. ASN(RDA) approved FY06 (2nd) LRIP up to 4 units and path forward which includes FY07 (3rd) LRIP and Full Rate Production Decision in FY08. This decision was documented in Acquisition Decision Memorandum (ADM) dated 21 Sep 2006.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development & Integration	CPIF	Lockheed Martin	97.283									0.000	97.283	
Hardware Development & Integration	CPIF	Lockheed Martin	90.972	5.021	07/06							Continuing	Continuing	
Hardware Development & Integration	WX	NSWC, PC	7.140									Continuing	Continuing	
Systems Engineering	CPIF	Lockheed Martin	5.465									0.000	5.465	
Systems Engineering	CPIF	Lockheed Martin	6.486									Continuing	Continuing	
Systems Engineering	WX	NSWC, PC	1.915	0.270	07/06							Continuing	Continuing	
Award Fees	CPIF	Lockheed Martin	5.485									0.000	5.485	
Subtotal Product Development			214.746	5.291		0.000		0.000		0.000		Continuing	Continuing	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CPIF	Lockheed Martin	7.092									0.000	7.092	
Software Development	CPIF	Lockheed Martin	6.961									Continuing	Continuing	
Software Development	WX	NSWC, PC	2.142									Continuing	Continuing	
ILS	CPIF	Lockheed Martin	5.682									0.000	5.682	
ILS	CPIF	Lockheed Martin	10.104	1.300	07/06							Continuing	Continuing	
ILS	WX	NSWC, PC	2.074	1.483	02/06							Continuing	Continuing	
ILS	Various	Various	0.000	1.125	07/06							Continuing	Continuing	
Ship Integration	CPIF	Lockheed Martin	1.258									0.000	1.258	
Ship Integration	CPIF	Lockheed Martin	2.878	9.060	07/06							0.000	11.938	
Ship Integration**	Various	Various	13.451									0.000	13.451	
Subtotal Support			51.642	12.968		0.000		0.000		0.000		Continuing	Continuing	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 0260 Remote Minehunting Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	14.210	10.961	07/06							Continuing	Continuing	
Developmental Test & Evaluation	WX	NSWC, PC	8.164	1.080	02/06							Continuing	Continuing	
Developmental Test & Evaluation	WX	COTF	0.000	0.300	02/06							Continuing	Continuing	
Developmental Test & Evaluation	various	VARIOUS	0.000	3.058	07/06	5.104	11/06					Continuing	Continuing	
Subtotal T&E			40.844	15.399		5.104		0.000		0.000		Continuing	Continuing	

Remarks:

Contractor Engineering Support	CPIF	Lockheed Martin	3.699	2.570	07/06	0.300	11/06					Continuing	Continuing	
Government Engineering Support	WX	NSWC, PC	22.393	0.503	07/06	0.100	11/06					Continuing	Continuing	
Government Engineering Support	WX	NSWC, PC	0.000	0.137	02/06							Continuing	Continuing	
Program Management Support	CPFF	CACI	4.308			0.050	11/06					Continuing	Continuing	
Travel	PD	NAVSEA	0.438	0.078	02/06	0.050	11/06					Continuing	Continuing	
SBIR Assessment	Various	Various	6.361									Continuing	Continuing	
Subtotal Management			37.199	3.288		0.500		0.000		0.000		Continuing	Continuing	

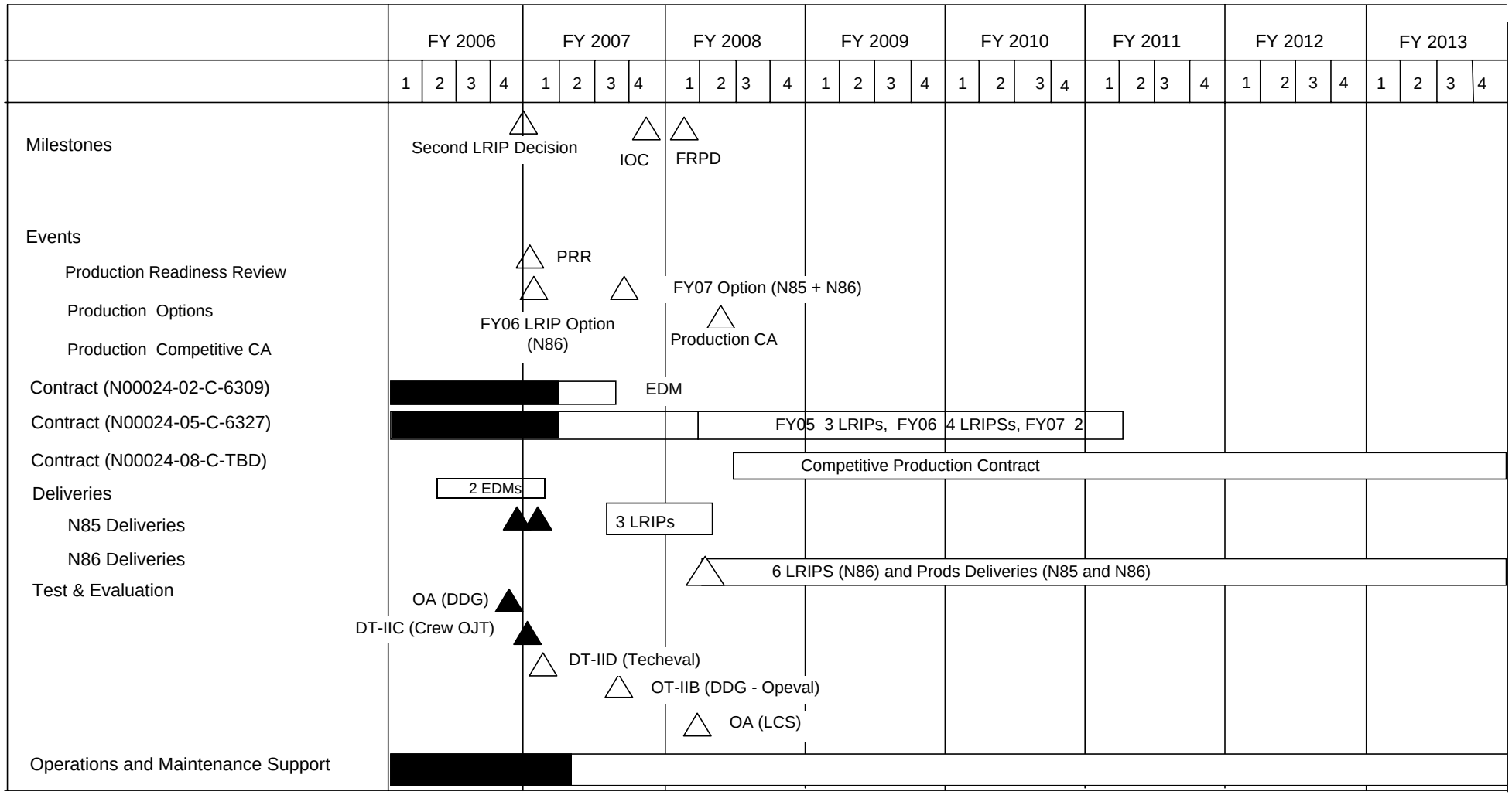
Remarks:

Total Cost			344.431	36.946		5.604		0.000		0.000		Continuing	Continuing	

Remarks:

EXHIBIT R-4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, N/BA-4	0603502N, Surface & Shallow Water MCM	0260 Remote Minehunting Systems	

AN/WLD-1(V)(1) PROGRAM SCHEDULE



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestones:								
Second (FY06) LRIP Decision	4Q							
FRPD			1Q					
IOC		4Q						
Events:								
Production Readiness Review		1Q						
FY06 and FY07 Options		1Q-4Q						
Production Competitive CA			2Q					
Contract (N00024-02-C-6309):								
EDM	1Q - 4Q	1Q-3Q						
Contract (N00024-05-C-6327):								
FY05 LRIP	1Q-4Q	1Q-4Q	1Q					
FY06 LRIP Option		1Q-4Q	1Q-4Q	1Q				
FY07 Production Option		4Q	1Q-4Q	1Q-4Q	1Q - 4Q	1Q		
Contract (N00024-08-C-TBD):								
Compettitive Production Contract			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Deliveries:								
N85 Deliveries	4Q	1Q-4Q	1Q					
N86 Deliveries		3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Test & Evaluation:								
OA on DDG	4Q							
DT-IIC - Crew OJT		1Q						
DT-IID - Techeval		1Q						
OT-IIB - DDG Opeval		3Q						
OA on LCS			2Q					
Operations and Maintenance Support	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**76.865**	**13.568**	**19.367**	**28.304**	**25.302**						
RDT&E Articles Qty											

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

(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 Mine Countermeasures Commander's Estimate of the Situation (MCM CES)*. 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 Surface Sweep System (US3) is a magnetic/acoustic sweep system developed to sweep acoustic/magnetic influence mines from an unmanned surface platform deployed from the Littoral Combat Ship (LCS).

* Formerly Course of Action Planner (COAP)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) B. Accomplishments/Planned Program

BSP / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.616	0.321	0.000	0.000
RDT&E Articles Quantity				

Develop NAVO and NRL products into an integrated Battle Space Profiler (BSP) System.

BSP / Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.110	0.050	0.000	0.000
RDT&E Articles Quantity				

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

BSP / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.320	0.106	0.000	0.000
RDT&E Articles Quantity				

Management:
Provide program management support and travel for BSP program.

BSP TOTAL	**1.046**	**0.477**	**0.000**	**0.000**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) B. Accomplishments/Planned Program

C4I / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.744	1.056	0.000	0.000
RDT&E Articles Quantity				

Product Development:
Continue MIW information system engineering effort. This effort to include the ongoing development of the MIW Command Control, Communication, Computers and Intelligence (C4I) Surveillance Reconnaissance (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 will support FORCEnet objectives to define MIW C4I capability in 2015.

C4I / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.153	0.223	0.000	0.000
RDT&E Articles Quantity				

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

C4I TOTAL	**0.897**	**1.279**	**0.000**	**0.000**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) B. Accomplishments/Planned Program

MCM CES / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.814	0.262	0.364	0.093
RDT&E Articles Quantity				

Product Development: Development of MCM Commander's Estimate of the Situation (MCM CES) and Rule Set Engine. (FY07) Complete development of Build 0, testing for Build 0, begin Build 1 development, and develop Build 1 modules. (FY08) Development of Build 1, MEDAL 2.0 and MCM CES Build 1 modules. (FY09) Complete integration testing with MEDAL 2.0.

MCM CES / Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.110	0.559	0.600	0.060
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 CES 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.

MCM CES / Test and Evaluation	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.100	0.000	0.100
RDT&E Articles Quantity				

Test and Evaluation:
Perform Test and Evaluation of MCM CES tool. (FY07) Complete testing of Build 0 EDM. (FY09) Complete testing of Build 1 with MEDAL Baseline 2.0.

MCM CES / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.094	0.080	0.080	0.020
RDT&E Articles Quantity				

Management: Provide program management support and travel for MCM CES. 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.

MCM CES TOTAL	**1.018**	**1.001**	**1.044**	**0.273**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades

(U) B. Accomplishments/Planned Program

HFWB / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.462	5.901	6.351	1.771
RDT&E Articles Quantity				

Begin Design and fabrication of transducer and associated electronics; Integration of fiber optic tow cable; Design and selection of shipboard Commercial-off-the-Shelf (COTS) processing and operator console components. Continue design and fabrication efforts; begin laboratory integration, testing and in-water component tests.

HFWB / Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.667	2.400	4.500	0.500
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.

HFWB / T&E	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.175	0.350	1.040	2.401
RDT&E Articles Quantity				

Conduct component and development Environmental Qualification Testing (EQT).

HFWB / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.418	0.505	0.701	0.260
RDT&E Articles Quantity				

Management:
Provide program management support and travel for AN/SQQ-32 High Frequency Wideband (HFWB) Upgrade program.

HFWB TOTAL	**7.722**	**9.156**	**12.592**	**4.932**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) B. Accomplishments/Planned Program

MEDAL / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.424	4.251	5.886	5.383
RDT&E Articles Quantity				

Product Development: 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. Complete IOC Build 10, complete development and test of Build 11, Initiate development of Enterprise Architecture (EA) v.1. Complete IOC Build complete development and test of EA v.1, Initiate development of EA v.2. Complete IOC EA v.1. Developed and integrated Global Command and Control System-Maritime (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.

MEDAL / Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.402	0.402	0.402
RDT&E Articles Quantity				

Support: Oversee technical integration of developed algorithms and models that have demonstrated their effectiveness with respect to their objectives. Support effort to include communication with activities such as applied labs, government activities, and designated contractors. Assist in providing the speed, agility, adaptability, and flexibility required for modern MCM operations.

MEDAL / Test and Evaluation	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.500	0.250	0.750
RDT&E Articles Quantity				

Test and Evaluation: Perform testing of all builds and baselines of MEDAL and MEDAL integration, test of Build ll, Test of Baseline 2.0.

MEDAL / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.461	0.570	0.570	0.570
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. 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, Assault Breaching Systems of Systems (ABSoS), LCS, 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	**2.885**	**5.723**	**7.108**	**7.105**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) B. Accomplishments/Planned Program

USV / Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.092	3.648	2.184
RDT&E Articles Quantity			2	

Hardware and Software Development for the Unmanned Surface Sweep System (US3).

USV / Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.890	2.047	5.667
RDT&E Articles Quantity				

Engineering and ILS support for developing USV system. Support for programmatic and logistical documentation.

USV / Test and Evaluation	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.168	0.895	3.898
RDT&E Articles Quantity				

Risk Reduction Testing/ CT and DT planning and completion.

USV / Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.581	0.970	1.243
RDT&E Articles Quantity				

Program support and management necessary to monitor contractor progress; review system capabilities; monitor cost and schedule; monitor contractor deliverables.

US3 TOTAL	**0.000**	**1.731**	**7.560**	**12.992**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
2622 / OPN (LV075/LV078/LV080/LV830/LV900)	25.261	23.357	11.339	11.444						

(U) D. ACQUISITION STRATEGY:

HFWB - Naval Surface Warfare Center, Panama City (NSWC, PC) will team with a ARL UT to design and develop the HFWB upgrade to the AN/SQQ-32.

BSP - The system is being developed by NAVO, NRL and NSWC, PC. The improvements being incorporated into the BSP system are modifications to existing products

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 COMINEWARCOM 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 Mine Countermeasures Commander's Estimate of the situation (MCM CES) is to deliver the software module within MEDAL builds by implementing the CES framework into the MEDAL software.

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 include a milestone C LRIP decision in FY10 and then LRIP and a full rate production decision in FY10.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Develop Bottom Sediment Classifier	WX	NRL	0.000	0.258	04/06							0.000	0.258	
Develop Current Profiler	WX	NAVO	0.000									0.000	0.000	N/A
Develop Hydro-Optics Package	WX	NAVO	0.000									0.000	0.000	
Systems Engineering and Integratior	WX	NSWC, PC		0.100	05/06	0.206	11/06					0.000	0.306	
System Development	WX	NSWC, PC	0.000	0.258	02/06	0.115	11/06					0.000	0.373	
Subtotal Product Development			0.000	0.616		0.321		0.000		0.000		0.000	0.937	
Remarks:														
Develop Logistics Products	WX	NSWC, PC	0.000	0.110	02/06	0.050	11/06					0.000	0.160	N/A
Subtotal Support			0.000	0.110		0.050		0.000		0.000		0.000	0.160	
Remarks:														
Subtotal T&E			0.000	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					0.000	0.080	N/A
Travel	PD	NAVSEA	0.000	0.080	10/05	0.010	10/06					0.000	0.090	
Government Engineering Support	WX	NSWC, PC		0.190	02/06	0.066	10/06					0.000	0.256	N/A
Subtotal Management			0.000	0.320		0.106		0.000		0.000		0.000	0.426	
Remarks:														
BSP TOTAL			**0.000**	**1.046**		**0.477**		**0.000**		**0.000**		**0.000**	**1.523**	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	NSWC, PC/NAVAIR	1.115	0.744	11/05	1.056	11/06					0.000	2.915	
Subtotal Product Development			1.115	0.744		1.056		0.000		0.000		0.000	2.915	
Remarks:														
												0.000	0.000	N/A
Software Development	CPFF	SAIC	0.350									0.000	0.350	
Subtotal Support			0.350	0.000		0.000		0.000		0.000		0.000	0.350	
Remarks:														
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Program Management Support	CPFF	CACI	0.168	0.050	10/05	0.045	10/06					0.000	0.263	N/A
Travel	PD	NAVSEA	0.074			0.010	10/06					0.000	0.084	
Government Engineering Support	WX	NSWC, PC		0.103	10/05	0.168	10/06					0.000	0.271	
Program Management Support	Various	NAVSEA	0.157									0.000	0.157	N/A
SBIR Assessment			0.019									0.000	0.019	N/A
Subtotal Management			0.418	0.153		0.223		0.000		0.000		0.000	0.794	
Remarks:														
C4I TOTAL			**1.883**	**0.897**		**1.279**		**0.000**		**0.000**		**0.000**	**4.059**	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	NSWC, PC	0.000	0.814	11/05	0.262	11/06	0.364	11/07	0.093	11/08	Continuing	Continuing	
Subtotal Product Development			0.000	0.814		0.262		0.364		0.093		0.000	1.533	
Remarks:														
Software Development	CPFF	SAIC		0.110	11/05	0.559	11/06	0.600	11/07	0.060	11/08	Continuing	Continuing	N/A
Subtotal Support			0.000	0.110		0.559		0.600		0.060		0.000	1.329	
Remarks:														
Test and Evaluation	VAR	Various				0.100	05/07			0.100	11/08	Continuing	Continuing	
Subtotal T&E			0.000	0.000		0.100		0.000		0.100		0.000	0.200	
Remarks:														
Program Management Support	CPFF	CACI		0.045	10/05	0.050	10/06	0.050	10/07	0.020	10/08	Continuing	Continuing	N/A
Travel	PD	NAVSEA		0.005	10/05	0.005	10/06	0.005	10/07			Continuing	Continuing	
Government Engineering Support	WX	NSWC, PC		0.044	10/05	0.025	10/06	0.025	10/07			Continuing	Continuing	N/A
Subtotal Management			0.000	0.094		0.080		0.080		0.020		0.000	0.274	
Remarks:														
MCM CES TOTAL			**0.000**	**1.018**		**1.001**		**1.044**		**0.273**		**0.000**	**3.336**	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	ARL:UT/NSWC PC		4.060	11/05	4.857	11/06	6.101	10/07	1.771	10/08	Continuing	Continuing	
Tow Cable Development	WX	NSWC, PC		0.800	10/05	0.599	10/06					Continuing	Continuing	
Ship Integration	WX	NSWC, PC		0.602	10/05	0.445	10/06	0.250	10/07			Continuing	Continuing	
Subtotal Product Development			0.000	5.462		5.901		6.351		1.771		0.000	19.485	
Remarks:														
(HFWB) Software Development	WX	ARL:UT; NSWC:PC		1.317	11/05	1.400	11/06	3.500	10/07	0.250	10/08	Continuing	Continuing	N/A
(HFWB) Integrated Logistics Support	WX	NSWC, PC		0.350	10/05	1.000	10/06	1.000	10/07	0.250	10/08	Continuing	Continuing	
Subtotal Support			0.000	1.667		2.400		4.500		0.500		0.000	9.067	
Remarks:														
Developmental Test & Evaluation	WX	NSWC:PC, ARL:UT		0.175	11/05	0.350	11/06	1.040	10/07	2.401	10/08	Continuing	Continuing	
Subtotal T&E			0.000	0.175		0.350		1.040		2.401		0.000	3.966	
Remarks:														
Program Management Support	Various	Various		0.268	10/05	0.290	10/06	0.386	10/07	0.150	10/08	Continuing	Continuing	N/A
Travel	PD	NAVSEA				0.015	10/06	0.015	10/07	0.010	10/08	Continuing	Continuing	
Government Engineering Support	WX	NSWC, PC		0.150	10/05	0.200	10/06	0.300	10/07	0.100	10/08	Continuing	Continuing	N/A
Subtotal Management			0.000	0.418		0.505		0.701		0.260		0.000	1.884	
Remarks:														
HFWB TOTAL			**0.000**	**7.722**		**9.156**		**12.592**		**4.932**		**0.000**	**34.402**	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CPFF	SAIC	4.292	2.424	11/05	4.251	11/06	5.886	11/07	5.383	11/08	Continuing	Continuing	
Subtotal Product Development			4.292	2.424		4.251		5.886		5.383		0.000	22.236	
Remarks:														
Software Engineering	WX	SPAWAR	0.000			0.182	11/06	0.182	11/07	0.182	11/08	Continuing	Continuing	N/A
Software Engineering	WX	NSWC, PC	0.000			0.220	11/06	0.220	11/07	0.220	11/08	Continuing	Continuing	
Subtotal Support			0.000	0.000		0.402		0.402		0.402		0.000	1.206	
Remarks:														
Test and Evaluation	VAR	Various	0.000			0.500	10/06	0.250	10/07	0.750	10/08	Continuing	Continuing	N/A
Subtotal T&E			0.000	0.000		0.500		0.250		0.750		0.000	1.500	
Remarks:														
Program Management Support	CPFF	CACI	0.290	0.150	10/05	0.245	10/06	0.245	10/07	0.245	10/08	Continuing	Continuing	N/A
Travel	PD	NAVSEA	0.124	0.015	10/05	0.025	10/06	0.025	10/07	0.025	10/08	Continuing	Continuing	
SBIR Assessment			0.054									Continuing	Continuing	
Government Engineering Support	WX	NSWC, PC		0.296	10/05	0.300	10/06	0.300	10/07	0.300	10/08	Continuing	Continuing	
Program Management Support	Various	NAVSEA	0.350									Continuing	Continuing	N/A
Subtotal Management			0.818	0.461		0.570		0.570		0.570		0.000	2.989	
Remarks:														
MEDAL TOTAL			**5.110**	**2.885**		**5.723**		**7.108**		**7.105**		**0.000**	**27.931**	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

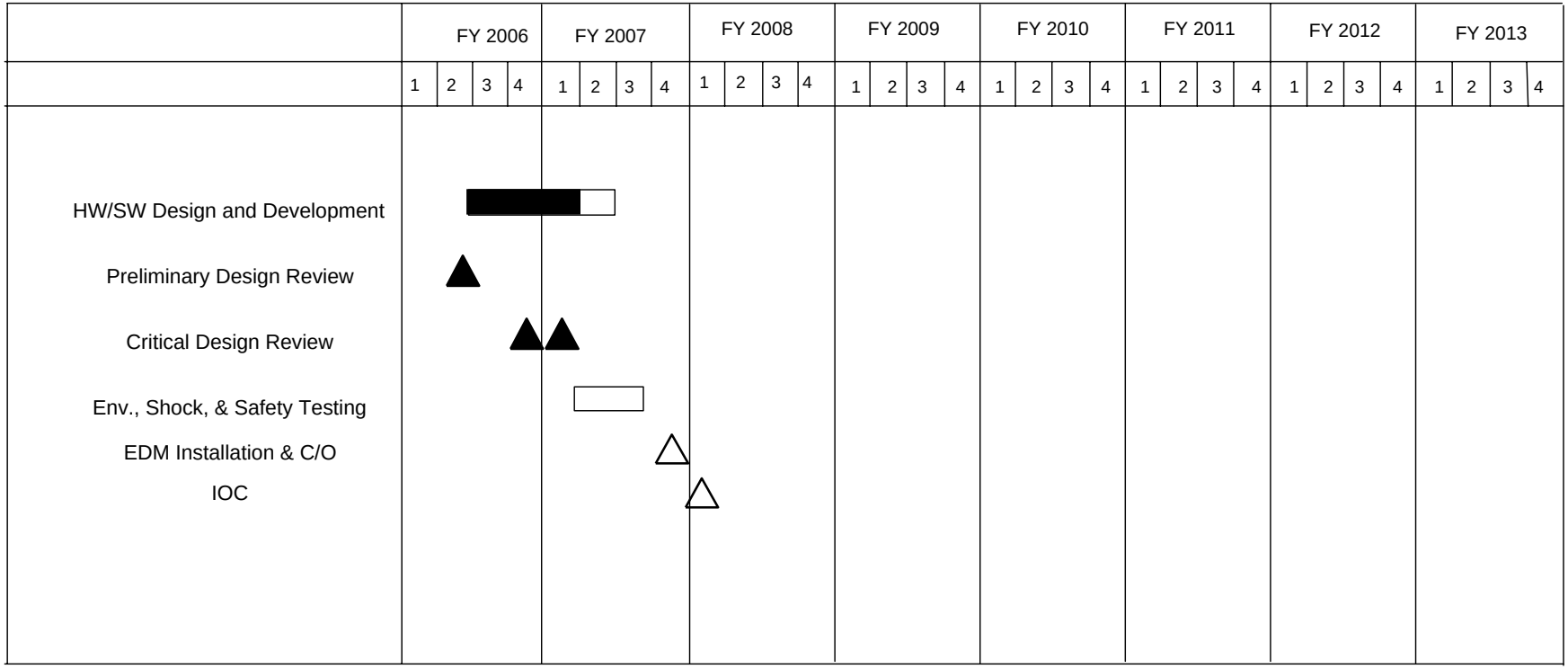
PROJECT NUMBER AND NAME: 1233 Mine Counter Measures Mid-Life Upgrades

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	TBD	EDO						3.622	11/07	2.000	11/08	Continuing	Continuing	
Product Development	WX	NSWC, PC				0.092	04/07	0.026	11/07	0.184	11/08	Continuing	Continuing	N/A
Subtotal Product Development			0.000	0.000		0.092		3.648		2.184		0.000	5.924	
Remarks:														
Engineering	TBD	EDO						0.257	11/07	1.477	11/08	Continuing	Continuing	
Integrated Logistics	TBD	EDO						0.355	11/07	0.979	11/08	Continuing	Continuing	
Engineering	WX	NSWC, PC				0.609	11/06	1.300	11/07	2.071	11/08	Continuing	Continuing	
Integrated Logistics	WX	NSWC, PC				0.281	11/06	0.135	11/07	1.140	11/08	Continuing	Continuing	
Subtotal Support			0.000	0.000		0.890		2.047		5.667		0.000	8.604	
Remarks:														
T&E	TBD	EDO						0.627	11/07	1.559	11/08	Continuing	Continuing	
T&E	WX	NSWC, PC				0.168	11/06	0.268	11/07	2.339	11/08	Continuing	Continuing	
Subtotal T&E			0.000	0.000		0.168		0.895		3.898		0.000	4.961	
Remarks:														
Contractor Management	TBD	EDO						0.323	11/07	0.466	11/08	Continuing	Continuing	N/A
Governemnt Management & Support	Var	Var				0.556	11/06	0.622	11/07	0.752	11/08	Continuing	Continuing	N/A
Travel	PD	NAVSEA				0.025	11/06	0.025	11/07	0.025	11/08	Continuing	Continuing	N/A
Subtotal Management			0.000	0.000		0.581		0.970		1.243		0.000	2.794	
Remarks:														
US3 TOTAL			**0.000**	**0.000**		**1.731**		**7.560**		**12.992**		**0.000**	**22.283**	

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

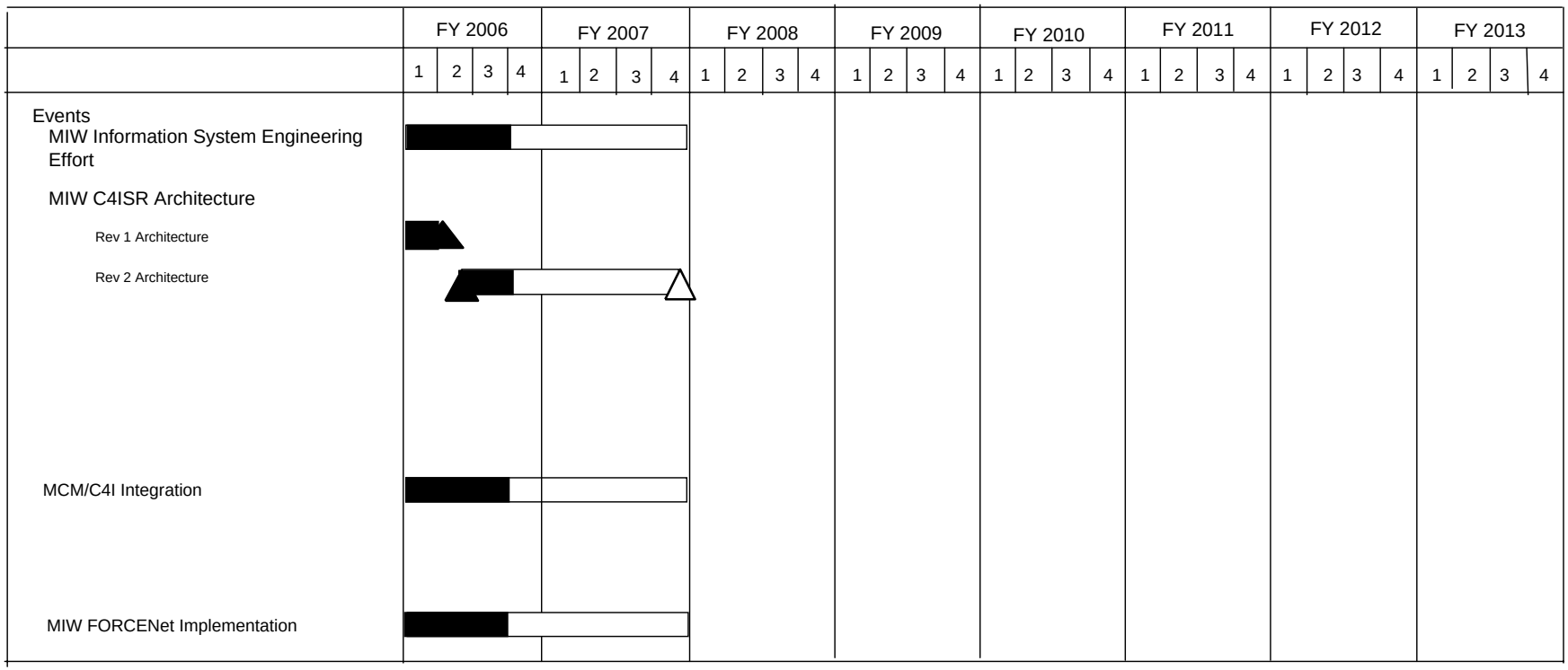
BSP PROGRAM SCHEDULE



CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

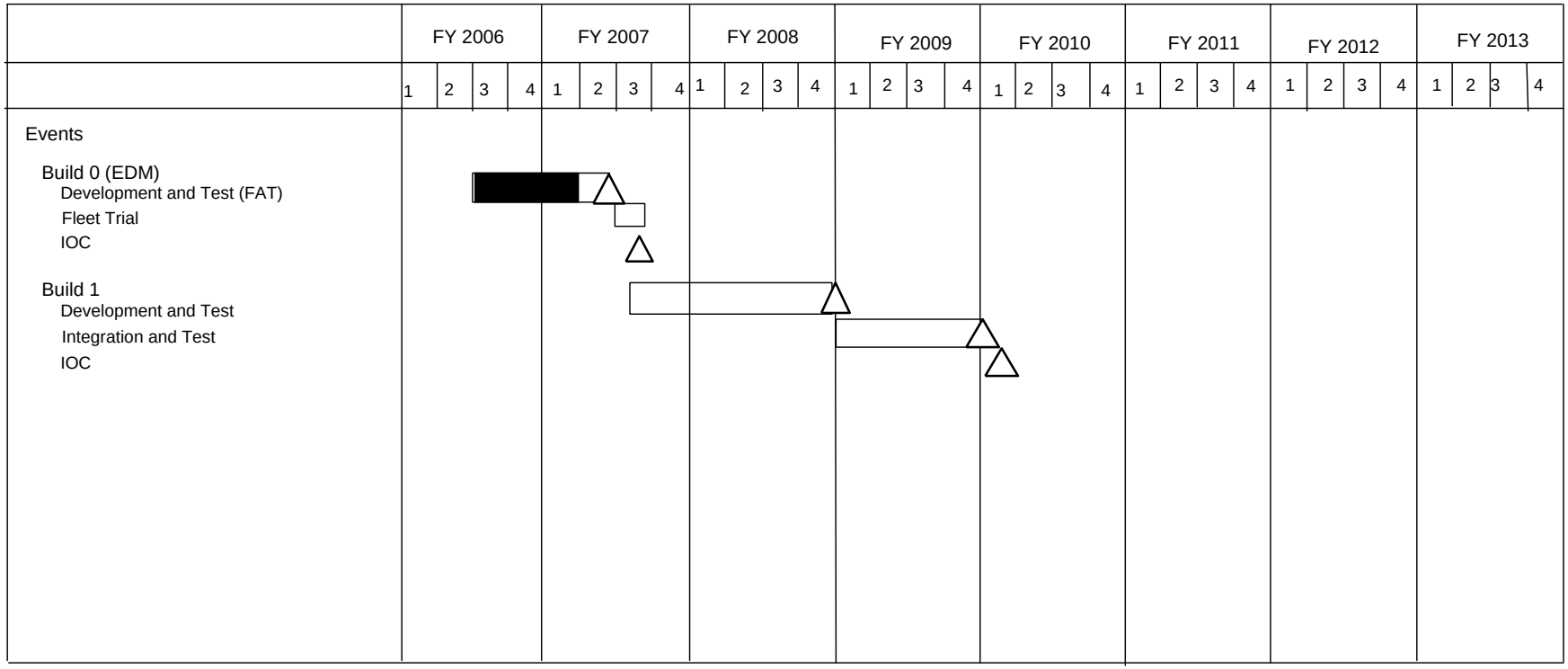
MIW C4ISR PROGRAM SCHEDULE



CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

MCM CES

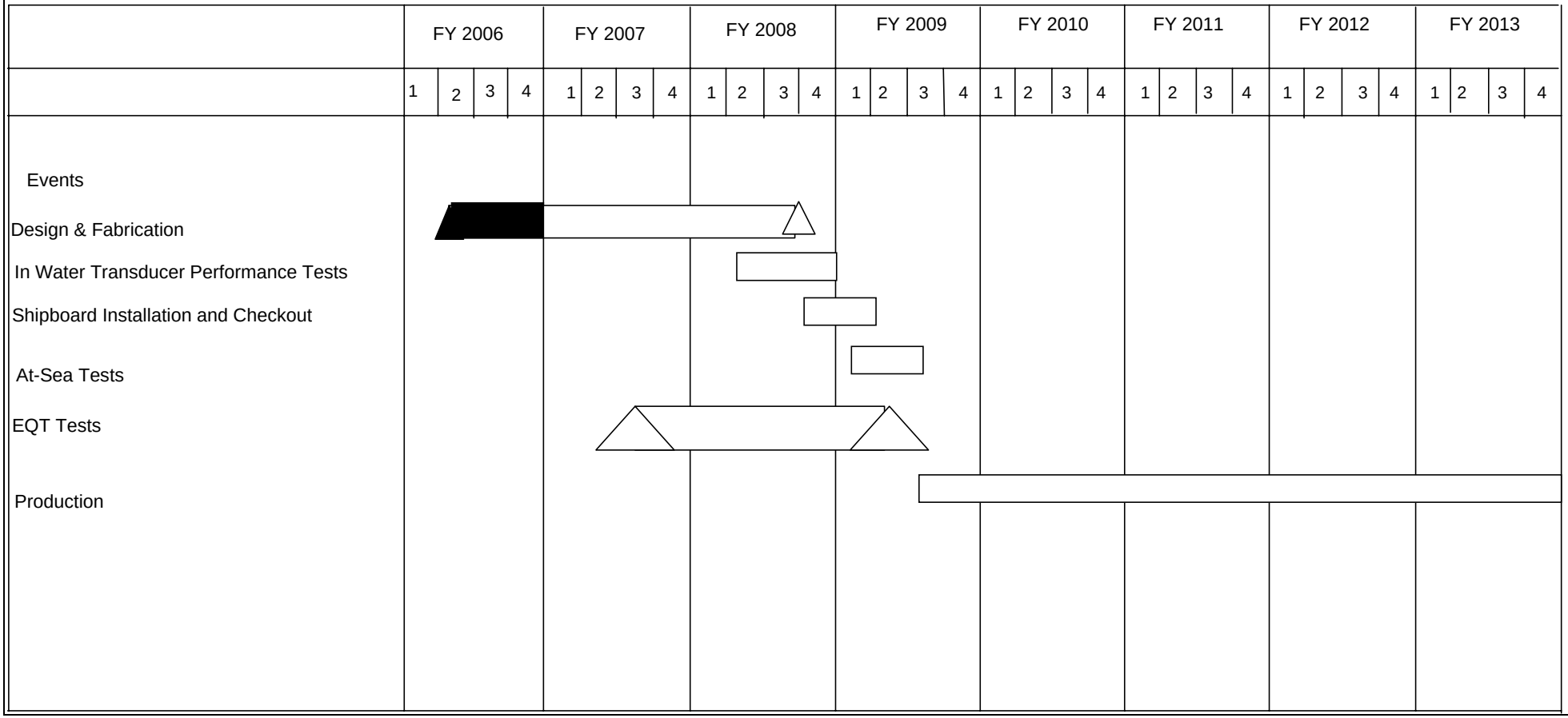


CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	R-1 ITEM NOMENCLATURE
RDT& E, N/BA-5	0603502N, Surface and Shallow Water MCM	1233 Mine Counter Measures Mid-Life Upgrades

E. Schedule Profile

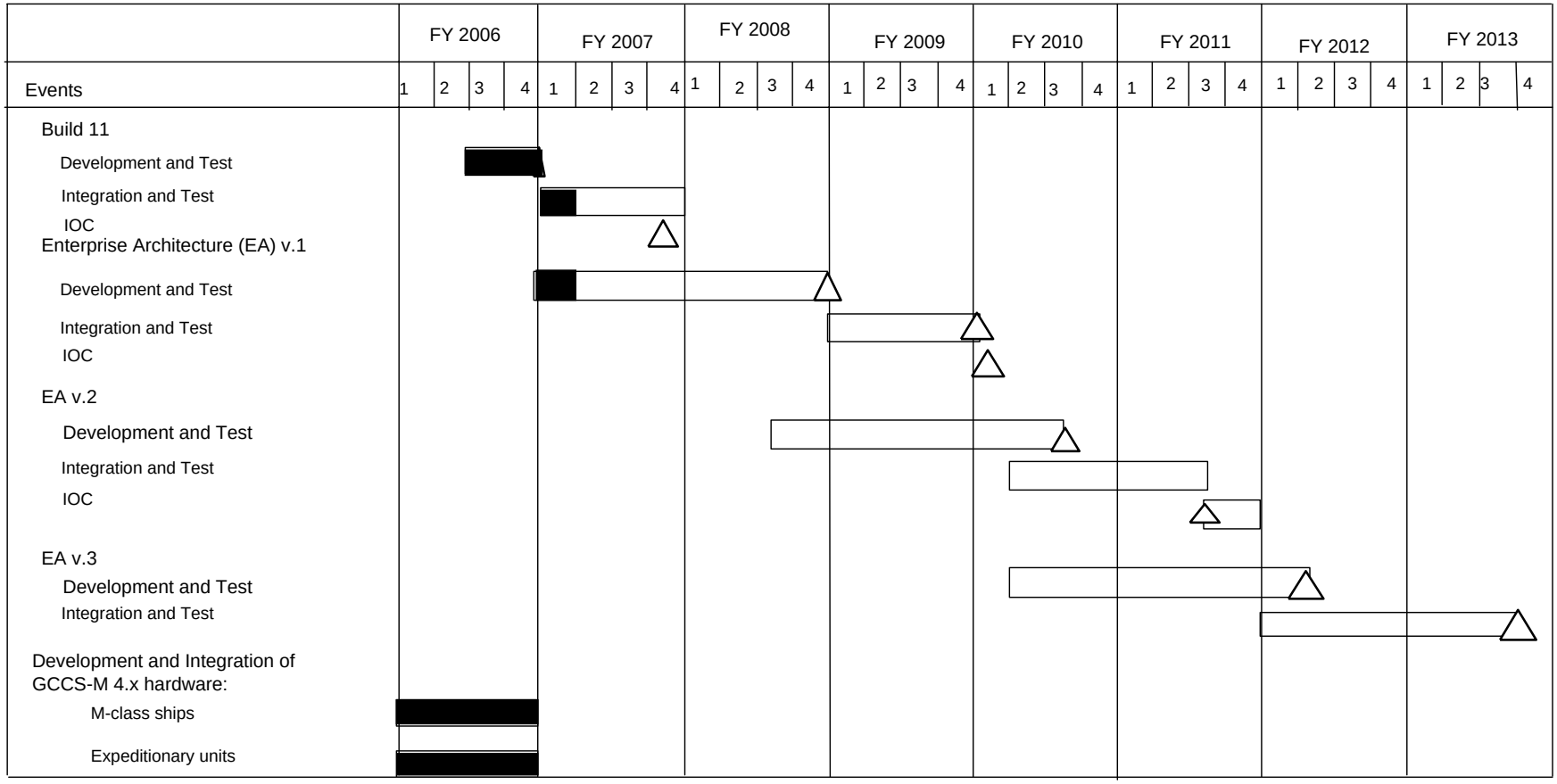
AN/SQQ-32 HFWB SONAR UPGRADE PROGRAM SCHEDULE



CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

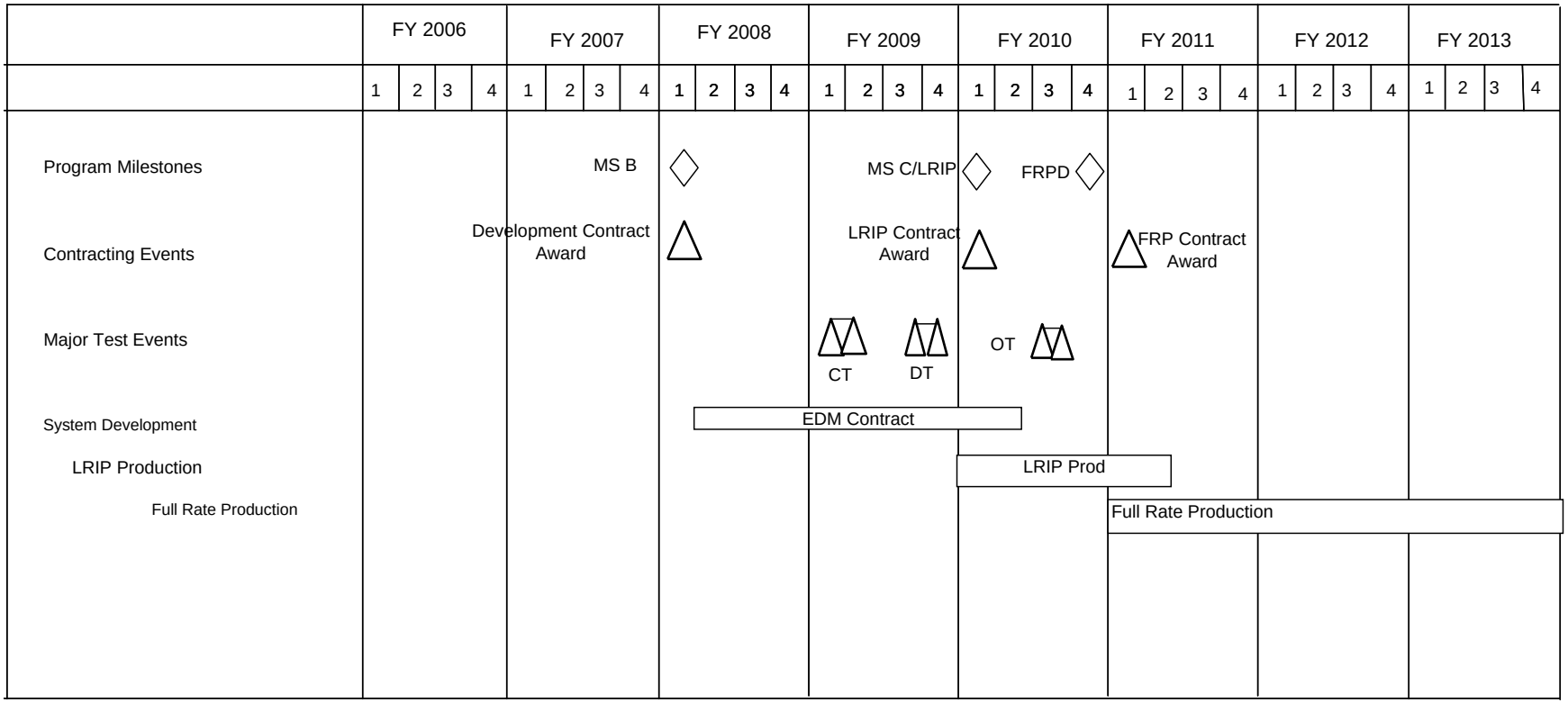
MEDAL PROGRAM SCHEDULE



CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

US3 PROGRAM SCHEDULE



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: BSP	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
HW/SW Design and Development	3Q-4Q	1Q-2Q						
Prelminary Design Review	2Q							
Critical Design Review	4Q	1Q						
Env., Shock, & Safety Testing		2Q-3Q						
EDM Installation & C/O		4Q						
IOC			1Q					

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: MIW C4ISR	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MIW Information System Engineering Effort	1Q-4Q	1Q-4Q						
MIW C4ISR Architecture:								
Rev 1 Architecture	1Q-2Q							
Rev2 Architecture	2Q-4Q	1Q-4Q						
MCM/MHC LAN Integration	1Q-4Q	1Q-4Q						
MIW FORCEnet Implementation	1Q-4Q	1Q-4Q						

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: MCM CES	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Build 0 Development and Test	3Q-4Q	1Q-2Q						
Build 0 Fleet Trial		3Q						
Build 0 IOC		3Q						
Build 1 Development and Test		3Q-4Q	1Q-4Q					
Build 1 Integration and Test				1Q-4Q				
Build 1 IOC					1Q			

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: HFWB	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Design/Fabrication	2Q-4Q	1Q-4Q	1Q-3Q					
In Water Transducer Performance Tests			2Q-4Q					
Shipboard Installation and Checkout			4Q	1Q				
At-Sea Test				1Q-3Q				
EQT Tests		2Q-4Q	1Q-4Q	1Q-2Q				
Production				3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: MEDAL	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Build 10 Integration and Tests								
Build 10 IOC								
Build 11 Development and Test	3Q-4Q							
Build 11 Integration and Tests		1Q-4Q						
Build 11 IOC		4Q						
Enterprise Architecture (EA)v.1 Development and Test		1Q-4Q	1Q-4Q					
EA v.1 Integration and Tests				1Q-4Q				
EA v.1 IOC					1Q			
EA v.2 Development and Test			3Q-4Q	1Q-4Q	1Q-3Q			
EA v.2 Integration and Test					2Q-4Q	1Q-3Q		
EA v.2 IOC						3Q-4Q		
EA v.3 Development and Test					2Q-4Q	1Q-4Q	1Q-2Q	
EA v.3 Integration and Test							1Q-4Q	1Q-3Q
Development and Integration of GCCS-M 4.x hardware:								
MCM Class	1Q-4Q							
Expeditionary Units	1Q-4Q							

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 1233 Mine Counter Measures Mid-Life Upgrades			
Schedule Profile: US3	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Program Milestones								
MS B			1Q					
Milestone C LRIP					1Q			
Full Rate Production Decision					4Q			
Contracting Events								
USV Development Contract Award			1Q					
LRIP Contract Award					1Q			
Full Rate Production Contract Award						1Q		
Test Events								
CT				1Q-2Q				
DT				3Q-4Q				
OT					3Q			
System Developments								
EDM Contract			2Q-4Q	1Q-4Q	1Q-2Q			
LRIP Production					1Q-4Q	1Q-2Q		
Full Rate Production						1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification										DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**359.711**	**52.953**	**25.228**	**13.026**	**21.811**					**CONT**	**472.729**
RDT&E Articles Qty		**2**									**2**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The November 2004 UUV Master Plan established Intelligence, Surveillance, and Reconnaissance (ISR), clandestine Mine Countermeasures (MCM) and Anti-Submarine Warfare as top priorities. In summer 2006, the Navy Capabilities Board (NCB) validated the MCM and ISR requirements for 21" UUVs. The Mission Reconfigurable UUV System (MRUUVS) was designated by the NCB as the vehicle to provide this capability to the warfighter.

Planning has begun for a new acquisition program to develop a modular, reconfigurable 21" MRUUVS for contract award in FY09. The MRUUVS will leverage technology developed under two previous programs: the AN/BLQ-11 Long-Term Mine Reconnaissance System (LMRS) and the Littoral Precision Underwater Mapping Array(LPUMA). To mitigate remaining risk before MS-B, the program will conduct component development and capability demonstration utilizing the LMRS to mature homing and docking methods for attack submarines (SSNs). LPUMA will be used to develop forward looking sonar used for mine detection, obstacle avoidance, and near-SSN maneuvering to include docking. The first payload developed by the MRUUVS program will support the MCM mission. Other payload developments will be initiated separately following system maturation.

R-1 SHOPPING LIST - Item No.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	Unmanned Undersea Vehicle 2094/2852	

(U) B. Accomplishments/Planned Program

LMRS	FY 06	FY 07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	12.226	0.000	0.000	0.000
RDT&E Articles Quantity	1			

Completed launch and recovery testing from an SSN. Conduct contract closeout.
RDT&E Articles = 1 system comprised of 2 vehicles, a recovery arm, support equipment and components.

ADUUV	FY 06	FY 07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	9.269	0.000	0.000	0.000
RDT&E Articles Quantity	1	0		

ADUUV development completed in FY06 with contract close out to take place in 2nd Quarter 2007. Delivery will include 1 RDT&E Article that comprise system and vehicle with supporting components.

21" MRUUVS	FY 06	FY 07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	30.581	25.228	13.026	21.811
RDT&E Articles Quantity				

Continue pre milestone B component development, capability demonstration, L-PUMA risk reduction efforts, Sea-Test to demonstrate recovery arm capability, and acquisition planning for 21" MRUUVS program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	Unmanned Undersea Vehicle 2094/2852	

(U) B. Accomplishments/Planned Program

LD MRUUV	FY 06	FY 07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	0.877	0.000	0.000	0.000
RDT&E Articles Quantity				

Conduct LD MRUUV requirements study.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	Unmanned Undersea Vehicle 2094	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2171 / OPN / Unmanned Undersea Vehicles	0.000	0.000	0.000	0.000				

(U) D. ACQUISITION STRATEGY:

A modular, reconfirgurable 21" MRUUVS will be initiated with a competatively awarded contract planned for FY09.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY08 Costs	FY 08 Award Date	FY09 Costs	FY 09 Award Date	
LMRS	CPAF/IF	Boeing	130.073	4.798	N/A							
Fees			7.612									
LMRS	Various	Various	43.622	7.428	N/A							
ADUUV	CPIF	Lockheed Martin	24.218	6.552	N/A							
ADUUV	Various	Various	17.922	2.717								
UUV P3I	Various	Various	37.383	0.000								
21" MRUUVS	Various	Various	24.123	19.555		18.938	TBD	8.019	TBD	3.236	TBD	
UUV Test center	Various	Various	7.502									
LD MRUUV	Various	Various	0.411	0.877								
21" MRUUVS Dev Contract	CPAF	TBD	0.000							14.400	12/08	
Subtotal Product Development			292.866	41.927		18.938		8.019		17.636		

Remarks:

Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000		

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: Surface & Shallow Water MCM, 0603502N

PROJECT NUMBER AND NAME: Unmanned Undersea Vehicle 2094

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY07 Costs	FY 07 Award Date	FY08 Costs	FY 08 Award Date	FY09 Costs	FY 09 Award Date	
Developmental Test & Evaluation	Various	Various	11.437									
Operational Test & Evaluation	WR	Various	0.000									
GFE/GFI	Various	Various	0.644									
TTLRF	WR	Various	7.081									
Award Fees												
Subtotal T&E			19.162	0.000		0.000		0.000		0.000		

Remarks:

Contractor Engineering Support			8.238	2.174	N/A	2.000	N/A	0.531	N/A	1.368	N/A	
Government Engineering Support			28.195	5.107	N/A	2.240	N/A	2.321	N/A	1.788	N/A	
Program Management Support			11.250	3.745	N/A	2.050	N/A	2.155	N/A	1.019	N/A	
Subtotal Management			47.683	11.026		6.290		5.007		4.175		

Remarks:

Total Cost			359.711	52.953		25.228		13.026		21.811		

VIRGINIA CLASS FOT&E

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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	2006				2007				2008				2009				2010				2011				2012				2013			
	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																																
ADUUV Development\ LPUMA Integration																																
21" MRUUVS	Risk Reduction/Acquisition Planning										MS B Contract Award																					
																					Design /Development / Test Phase											

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT Surface & Shallow Water MCM, 0603502N				PROJECT NUMBER AND NAME Unmanned Undersea Vehicle 2094/2852			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Complete LMRS Baseline	1Q-4Q							
ADUUV Development / LPUMA Integration	1Q-4Q	1Q-2Q						
21" Reconfigurable UUV								
Risk Reduction / Acquisition planning	1Q-4Q	1Q-4Q	1Q-4Q					
MS B			4Q					
Contract Award				1Q				
Design / Development / Test				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**206.214**	**26.746**	**35.742**	**35.194**	**44.019**						
RDT&E Articles Qty											

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

This program provides for a combination of U.S. Navy projects planned to counter the threat to amphibious landing forces from known and projected foreign land/sea mines, obstacles in the beach zone and surf zone approaches to amphibious assault areas. The Assault Breaching System (ABS) of Systems (Countermine/Counter Obstacle, Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T), Precision Navigation/Virtual Marking/Integration, C4I/Data Fusion) provides a full assault breaching capability which is an essential element to the Ship To Objective Maneuver (STOM) Concept of Operations.

Countermine/Counter Obstacle (CM/CO) -

Near term - JDAM Assault Breaching System (JABS) - This system is 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 /CO system is developed. This near-term 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. 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.

Far term - Counter Mine System (CMS) - will transition from a 6.3 S&T Concept Demonstration effort to a 6.4 development program after a concept decision/AoA in FY06.

ISR/T - Coastal Battlefield Reconnaissance and Analysis (COBRA) is the ISR/T part of the ABS of systems. One system consists of two Airborne Payloads and one Post Mission Analysis Station. Under the umbrella of evolutionary acquisition, three increments of development are planned; Block I introduces a daytime, surface laid minefield and obstacle detection capability for the Beach Zone. Blocks II and III will incorporate technology being developed by 6.3.

S&T. Block II adds a surfzone and night (darkness) detection capability. Block III adds a buried mine detection capability and on-board Near-Real-Time processing of Multi Spectral Imagery data.

COBRA will be a modular payload architecture of and integrated with the MQ-8B Fire Scout Vertical Takeoff and Landing Unmanned Aerial Vehicle (VTUAV) and will serve as the "detect" mission module of the Littoral Combat Ship (LCS) Mine Warfare mission package.

Precision Navigation/Virtual Marking- 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), and Amphibious Assault Vehicle (AAV) to enable the craft to safely navigate the neutralized assault lanes. A system of virtual or physical lane marking is to be developed to guide the assault craft through the neutralized assault lanes. OPN will fund the CRAFTALTS to upgrade the navigation systems.

LCU Navigation Upgrade: Modernized the navigation system to enable safe transit through the breached lane.

LCAC Autopilot Upgrade: An integrated improvement to the LCAC (Service Life Extension Program (SLEP) navigation system for craft control that allows precise navigation and hovering within the breached lane. These software upgrades and backfits will occur during scheduled LCAC SLEPs.

AAV Navigation Upgrade : Modernized the navigation system to enable precise transit through the breached lane.

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	2131 Assault Breaching Systems	

(U) B. Accomplishments/Planned Program

Product Development	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	18.105	30.142	29.947	37.232
RDT&E Articles Quantity				

Product Development: Countermine/Counter Obstacle (CM/CO) - JABS Follow-On-Test and Evaluation (FOT&E), risk mitigation, logistics, and operational readiness. Counter Mine System (CMS) - refine dart technology and delivery technique. Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T) - COBRA: Refine Block I technology, transition ONR developed technology into Blocks II and III, and enable the capability to detect surface laid mines in the surf zone (day and night), detect buried mines, and near-real-time onboard processing. Precision Navigation/Virtual Marking- Develop precise navigational upgrades for the Landing Craft, Air Cushion (LCAC) and Landing Craft, Utility (LCU), and Amphibious Amphibious Assault Vehicle (AAV) to enable the craft to safely navigate the neutralized assault lanes. Mine Threat Acquisition for R&D Development and Testing,
DDGPS Development (Marking).

Support	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	1.125	0.527	0.583	0.999
RDT&E Articles Quantity				

Support: CM/CO - 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. Precision Navigation/Virtual Marking - COTS technical analysis, product integration, market surveys, technical support in installation instructions. ISR/T - Technical analysis, modeling and simulation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	2131 Assault Breaching Systems	

(U) B. Accomplishments/Planned Program

Test and Evaluation	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	2.865	0.170	0.165	0.206
RDT&E Articles Quantity				

Test and Evaluation: CM/CO - JABS Risk Mitigation Testing; Commander Operational Test & Evaluation Forces Test Support, Arena testing. CMS arena testing, live weapon testing. Precision Navigation/Virtual Marking - Vehicle/crew compatibility testing, Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T) - COBRA Block I Operational Assessment, Block II and III OPEVAL.

Management	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	4.651	4.633	4.499	5.582
RDT&E Articles Quantity				

Management: ABSoS program management support, In-house contractor support (CACI, COMOPTEVFOR, and Northrop Grumman). Technical Direction Agent/Design Agent (TDA/DA) Engineering Support of Milestone 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	**26.746**	**35.472**	**35.194**	**44.019**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	2131 Assault Breaching Systems	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
2624 / OPN	2.246	8.236	1.447	7.426						
4225 / WPN	0.000	0.000	0.000	0.000						

(U) D. ACQUISITION STRATEGY:

Countermine/Counter Obstacle (CM/CO) is a two phased approach, near term and far term solutions. The near term will filed the JDAM Assault Breaching System (JABS) as an interim solution. JABS requires additional lethality and reliability testing during FY07. The far term solution is CMS, which will transition form ONR in 1st QTR 07 followed by MS B decision in 3rd QTR 07 and SD&D contract in 4th Qtr 07.

Intelligence/Surveillance/Reconnaissance/Targeting (ISR/T) - COBRA Block I will achieve MS C in 3rd QTR FY07 , COBRA Block II technology will transfer from ONR and achieve MS B in 2nd Qtr of 07. COBRA Block III technology will transition in FY11 with a MS B decision scheduled for 2nd QTR FY11.

Precision Navigation/Virtual Marking- The navigation upgrades for the Landing Craft, Air Cushion (LCAC) and Landing Craft, Utility (LCU) are in progress. AAV enhancements will achieve MS B in 2nd QTR FY 07 and MS C during 2nd QTR FY 08.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 2131 Assault Breaching Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	IH, NSWC:PC, NG	65.268	18.105	02/06	30.412	02/07	29.947	02/08	37.232	02/09	Continuing	Continuing	N/A
Ancillary Hardware Development	WX	IH, NSWC:PC, TBD	8.100									0.000	8.100	N/A
Systems Engineering	WX	IH, NSWC:PC	17.033									0.000	17.033	N/A
Training Development	WX	IH, NSWC:PC	2.000									0.000	2.000	N/A
Tooling	WX	IH, NSWC:PC, TBD	0.860									0.000	0.860	N/A
GFE	WX	IH, NSWC:PC	4.700									0.000	4.700	N/A
Subtotal Product Development			97.961	18.105		30.412		29.947		37.232		0.000	213.657	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support Equipment	WX	IH, NSWC:PC, SAIC	11.906	0.725	11/05	0.357	11/06	0.418	11/07	0.793	11/08	Continuing	Continuing	N/A
Software Development	WX	NSWC:PC	8.037									0.000	8.037	N/A
Integrated Logistics Support	WX	IH, NSWC:PC	2.712									0.000	2.712	N/A
Configuration Management	WX	IH, NSWC:PC	3.744									0.000	3.744	N/A
Technical Data	WX	IH, NSWC:PC	2.588									0.000	2.588	N/A
Studies & Analysis	WX	IH, NSWC:PC	3.639	0.400	11/05	0.170	11/06	0.165	11/07	0.206	11/08	Continuing	Continuing	
GFE	WX	IH, NSWC:PC	0.400										0.400	N/A
Subtotal Support			33.026	1.125		0.527		0.583		0.999		0.000	36.260	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 2131 Assault Breaching Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX, PD	IH, NSWC:PC TBD	26.753	2.865	11/05	0.170	11/06	0.165	11/07	0.206	11/08	Continuing	Continuing	N/A
Operational Test & Evaluation	WX	IH, NSWC:PC TBD	8.655									0.000	8.655	N/A
Tooling	WX	IH, NSWC:PC TBD	0.700									0.000	0.700	N/A
GFE	WX	IH, NSWC:PC TBD	0.400									0.000	0.400	N/A
Award Fees														
Subtotal T&E			36.508	2.865		0.170		0.165		0.206		0.000	39.914	

Remarks:

Contractor Engineering Support	CPFF	CACI, Northrup Grumman	3.789	0.878	11/05	0.710	11/06	0.869	11/07	1.075	11/08	Continuing	Continuing	N/A
Government Engineering Support	WX	IH, NSWC:PC	20.850	1.835	11/05	1.600	11/06	1.710	11/07	2.206	11/08	Continuing	Continuing	N/A
Program Management Support	WX	IH, NSWC:PC, NAVSEA	11.744	1.863	11/05	2.248	11/06	1.848	11/07	2.212	11/08	Continuing	Continuing	N/A
Travel	PD	NAVSEA	0.902	0.075	11/05	0.075	11/06	0.072	11/07	0.089	11/08	Continuing	Continuing	N/A
Assessment/BTR	Various	Various	1.434									0.000	1.434	N/A
Subtotal Management			38.719	4.651		4.633		4.499		5.582		0.000	58.084	

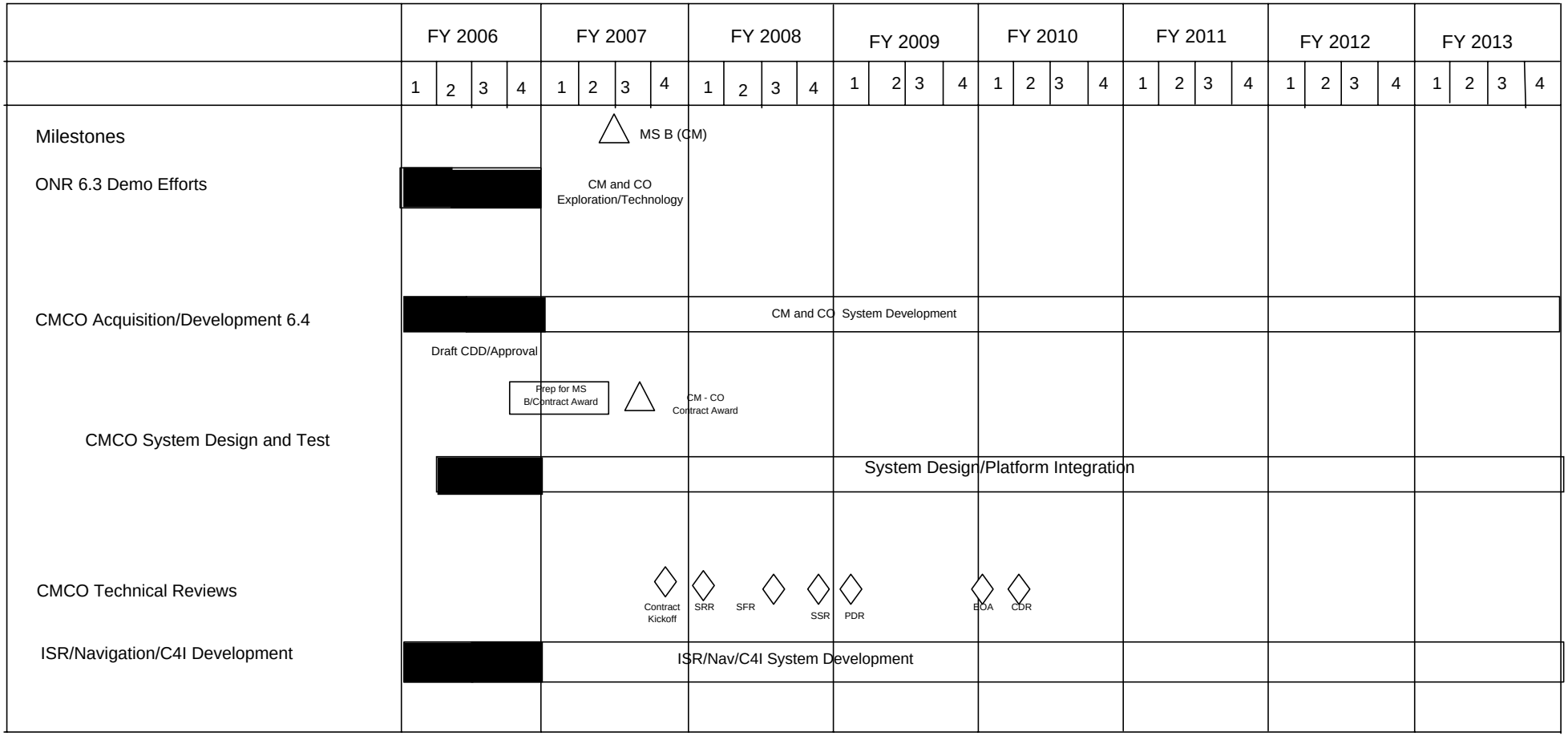
Remarks:

Total Cost			206.214	26.746		35.742		35.194		44.019		0.000	347.915	

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT Program Element (PE) No. and Name				PROJECT NUMBER AND NAME 2131 Assault Breaching Systems			
Schedule Profile: ABS	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
CM and CO Exploration/Technology Demonstration 6.3(ON	1Q-4Q							
COBRA Milestone B		2Q						
MAA/MNS/Risk Mitigation/Requirements Devel:								
Draft CDD/Approval	1Q							
MS B (CM-BZ CO)		2Q						
Prep for MS B/Contract Award	4Q	1Q-2Q						
CM and CO System Development	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
CM - CO Contract Award		3Q						
System Design/Platform integration	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Technical Reviews:								
Contract Kickoff		4Q						
SRR - System requirements Review			1Q					
SFR- System Functional Review			3Q					
SSR - System Software Review			4Q					
PDR - Preliminary Design Review				1Q				
EOA - Early Operational Assessment					1Q			
CDR- Critical Design Review					2Q			
ISR/NAV/C4I Development	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**0.000**	**7.464**	**0.000**	**0.000**	**0.000**						
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	3102 Low Frequency Broadband	

(U) B. Accomplishments/Planned Program

Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.464	0.000	0.000	0.000
RDT&E Articles Quantity				

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	3102 Low Frequency Broadband	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

(U) D. ACQUISITION STRATEGY:

NSWC, Panama City FL and NRL will award a contract to address the critical technologies necessary for the development of a UUV User Operational Evaluation System with low frequency boradband sonar. Procurement of the acquisition system is scheduled to start in FY11.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ADM Hardware Development		Bluefin, Cambridge, MA		3.836	08/06							0.000	3.836	
Technical Direction Agent	WX	NSWC, Panama City, FL		1.446	03/06								1.446	
Software Development		Various		1.504	03/06								1.504	
Subtotal Product Development			0.000	6.786		0.000		0.000		0.000		0.000	6.786	

Remarks:

Engineering Support		WB&B		0.183	06/06							0.000	0.183	
Subtotal Support			0.000	0.183		0.000		0.000		0.000		0.000	0.183	

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Technical Direction Agent	WX	NSWC, Panama City, FL		0.495	03/06							0.000	0.495	N/A
Subtotal T&E			0.000	0.495		0.000		0.000		0.000		0.000	0.495	
Remarks:														
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Total Cost			0.000	7.464		0.000		0.000		0.000		0.000	7.464	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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
UOES Contract Award				△																												
Critical Technology Development				▭	▭																											

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 3102 Low Frequency Broadband			
Schedule Profile: LFBB	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
UOES Contract Award	4Q							
Critical Technology Development	4Q	1Q-2Q						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**0.000**	**1.027**	**10.785**	**7.744**	**12.666**						
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 project 3102 was transferred to this project to fund an integrated UUV system vice a standalone sensor project.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface & Shallow Water MCM	3123 SMCM UUV	

(U) B. Accomplishments/Planned Program

SMCM UUV	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.027	10.785	7.744	12.666
RDT&E Articles Quantity				

Demonstrate operation of a UUV-based capability package for standoff, multiple MCM operations from surface MCM platforms (e.g., LCS, MCM, etc.)

Total	1.027	10.785	7.744	12.666

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface & Shallow Water MCM	3123 SMCM UUV

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
2622 / OPN / 72LV / LV079	0.000	0.000	0.000	0.000						

(U) D. ACQUISITION STRATEGY:

The SMCM UUV program procured 2 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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface & Shallow Water MCM

PROJECT NUMBER AND NAME: 3123 SMCM UUV

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SMCM UUV Incr 2 Development	CPAF	Bluefin, Cambridge, MA	0.000			7.042	11/06	0.594	11/07	0.607	11/08	Continuing	Continuing	
SMCM UUV Incr 3 Development	CPFF	TBD	0.000					2.892	11/07	7.260	11/08	Continuing	Continuing	
Software Development	WX	NSWC, Panama City, FL	0.000	0.435	03/06	0.600	11/06	0.450	11/07	0.470	11/08	Continuing	Continuing	
Subtotal Product Development			0.000	0.435		7.642		3.936		8.337		0.000	20.350	
Technical Direction Agent	WX	NSWC Panama City, FL	0.000	0.042	04/06	1.912	11/06	1.441	11/07	1.788	11/08	Continuing	Continuing	
Engineering Support	WX	NUWC Newport, RI	0.000	0.100	04/06	0.290	11/06	0.710	11/07	0.883	11/08	Continuing	Continuing	
Ship Integration		Various	0.000			0.200	04/07	1.200	11/07	0.919	11/08	Continuing	Continuing	
Subtotal Support			0.000	0.142		2.402		3.351		3.590		0.000	9.485	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

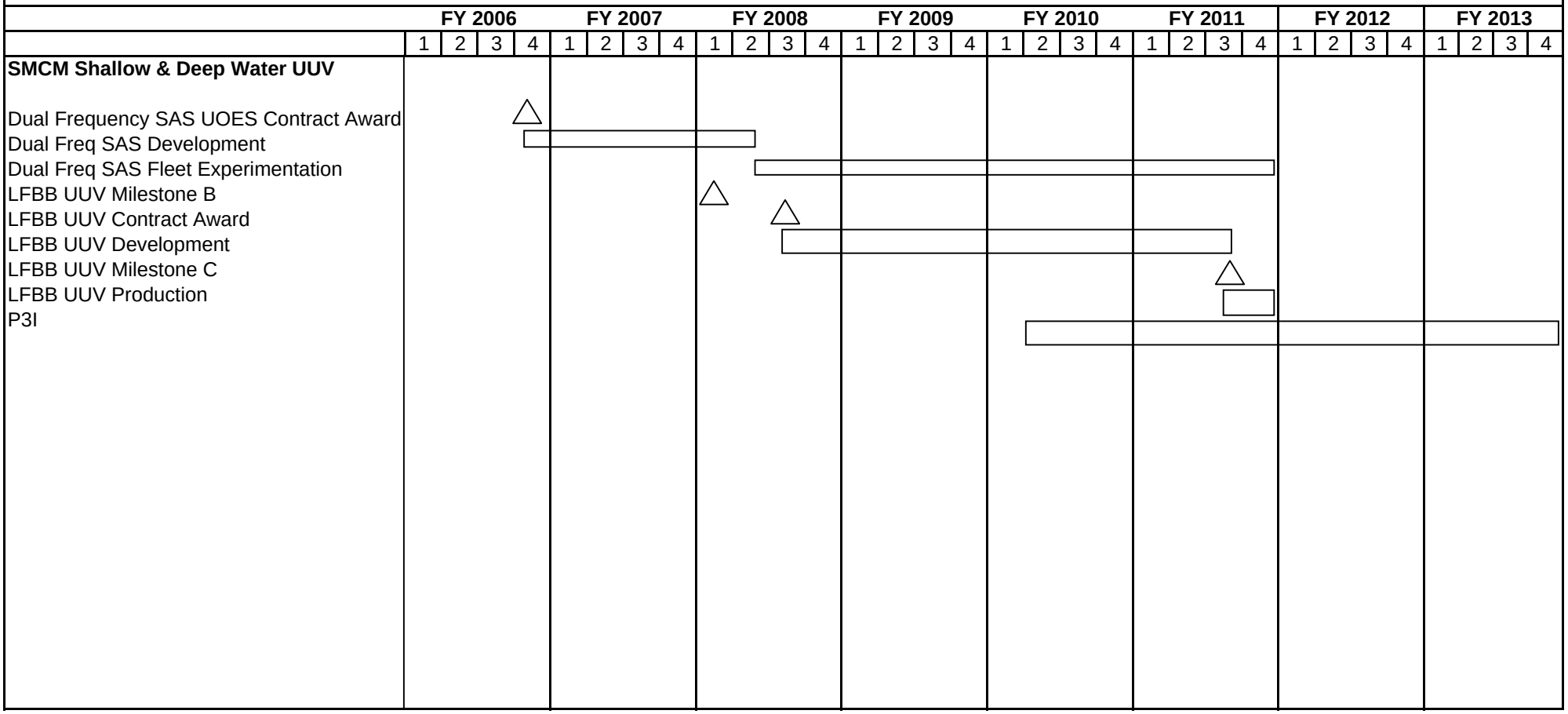
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface & Shallow Water MCM	3123 SMCM UUV

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	CMWC, Corpus Christi, TX	0.000	0.107	4/06	0.080	11/06	0.064	11/07	0.065	11/08	Continuing	Continuing	
T&E Support	CPFF	EDO, Corpus Christi, TX	0.000	0.189	04/06	0.193	11/06	0.240	11/07	0.293	11/08	Continuing	Continuing	
Subtotal T&E			0.000	0.296		0.273		0.304		0.358		0.000	1.231	
Remarks:														
Program Management Support	CPFF	Various, Wash, DC	0.000	0.154	03/06	0.468	11/06	0.153	11/07	0.381	11/08	Continuing	Continuing	
Subtotal Management			0.000	0.154		0.468		0.153		0.381		0.000	1.156	
Remarks:														
Total Cost			0.000	1.027		10.785		7.744		12.666		0.000	32.222	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND **0603502N, Surface & Shallow Wat**	PROJECT NAME AND NUMBER 3123 SMCM UUV

SMCM UUV Program Schedule



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 3123 SMCM UUV			
Small Shallow and Deep Water UUV	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Dual Frequency SAS UOES Contract Award	4Q							
Dual Frequency SAS Development	4Q	1Q-4Q	1Q-2Q					
Dual Frequency SAS Fleet Experimentation			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
LFBB UUV Milestone B			1Q					
LFBB UUV Contract Award			3Q					
LFBB Development			3Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
LFBB Milestone C						3Q		
LFBB Production						4Q		
P3I					2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification										DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Project Cost	**1.825**	**8.214**	**13.222**	**6.854**	**0.000**						
RDT&E Articles Qty											

(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). Development of a deep water Neutralization vehicle for EMNS will occur in FY12 - FY13.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	4025 Expendable Mine Neutralization System	

(U) B. Accomplishments/Planned Program

Product Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.431	8.077	0.000	0.000
RDT&E Articles Quantity				

Product Development:
Award Development Contract for Expendable Mine Neutralization System (EMNS) integrator. Initiate hardware design and development to include launcher, control console, and MCM-1 Class ship integration. Modify software for use on an MCM-1 class ship. Integrate EMNS Engineering Development Model (EDM) aboard MCM-1 Class Ship. Award contract for Common Neutralizer support. Provide test articles and technical support throughout EMNS development.

Support	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.525	3.839	2.733	0.000
RDT&E Articles Quantity				

Support:
Develop logistics products, including training materials and interactive technical manual. Provide Engineering support, including review for product development and ship integration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	4025 Expendable Mine Neutralization System	

(U) B. Accomplishments/Planned Program

Test and Evaluation	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.977	0.948	3.919	0.000
RDT&E Articles Quantity				

Test and Evaluation:
EMNS developmental testing including environmental and shock testing, safety testing, and contractor testing. Develop Test and Evaluation Master Plan (TEMP) and test reports. Conduct DT/OT.

Management	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.281	0.358	0.202	0.000
RDT&E Articles Quantity				

Management:
Provide program management support and travel for EMNS.

Total	**8.214**	**13.222**	**6.854**	**0.000**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	4025 Expendable Mine Neutralization System	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
EMNS 262200 OPN	0.000	0.000	7.431	15.020						
EMNS 422500 WPN	0.000	0.000	3.032	3.030						

(U) D. ACQUISITION STRATEGY:

Based on the approved Common Neutralizer Strategy, the Archerfish neutralizer will be integrated on the MCM-1 Avenger Class Ships. EMNS will be executed as an ECP to AMNS. The acquisition strategy will be full and open competition for non-neutralizer hardware development and system integration with a directed contractual relationship with VCT (flight control software). The Navy will award a sole source contract to BAE Systems for Common Neutralizer support, integration, and hardware manufacturing/delivery. All EMNS neutralizer equipment and support will be provided by BAE Systems to the Navy. The Navy will provide these assets as GFE to the integration contractor.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 4025 Expendable Mine Neutralization System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Develop Technical and Acquisition D	WX	NSWC, PC	1.203									0.000	1.203	N/A
Hardware and Software Developmen	CPIF	TBD	0.000			8.077	01/07					0.000	8.077	N/A
Common Neutralizer Development	C/CPIF	Raytheon Portsmouth, RI	0.000	2.431	02/06							0.000	2.431	N/A
Deep Water Neutralizer Developmen	WX	NSWC, PC	0.000									0.300	0.300	N/A
Deep Water Neutralizer Developmen	CPIF	BAE Systems	0.000									3.000	3.000	N/A
Subtotal Product Development			1.203	2.431		8.077		0.000		0.000		3.300	15.011	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

PROJECT NUMBER AND NAME: 4025 Expendable Mine Neutralization System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Develop Logistics Products	CPIF	TBD				0.808	01/07	1.183	10/07			0.000	1.991	N/A
Develop Logistics Products	WX	NSWC, PC	0.092	0.178	10/05	0.225	10/06	0.091	10/07			0.000	0.586	N/A
Engineering Support	CPIF	TBD				0.772	01/07	0.193	10/07			0.000	0.965	N/A
Engineering Support	WX	NSWC, PC	0.230	2.347	10/05	2.034	10/06	1.266	10/07			0.000	5.877	N/A
Deep Water Neutralizer ILS	CPIF	BAE Systems										0.277	0.277	N/A
Deep Water Neutralizer ILS	WX	NSWC, PC										0.205	0.205	N/A
Deep Water Neutralizer Engineering	CPIF	BAE Systems										2.200	2.200	
Deep Water Neutralizer Engineering	WX	NSWC, PC										0.860	0.860	
Subtotal Support			0.322	2.525		3.839		2.733		0.000		3.542	12.961	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603502N, Surface and Shallow Water MCM

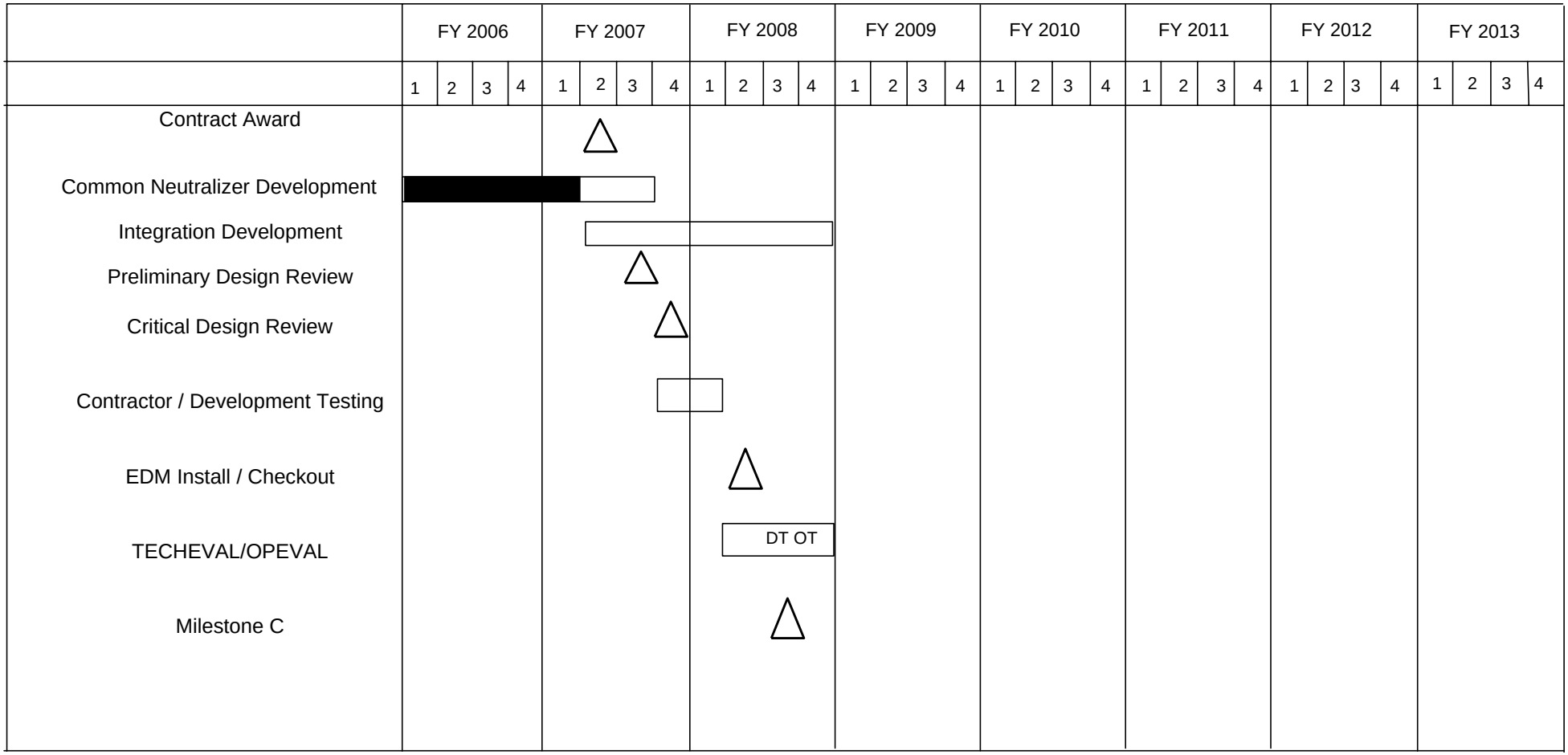
PROJECT NUMBER AND NAME: 4025 Expendable Mine Neutralization System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Develop TEMP	WX	NSWC, PC	0.100									0.000	0.100	N/A
CT/DT/OT	CPIF	TBD				0.058	01/07	1.522	10/07			0.000	1.580	N/A
CT/DT/OT	WX	NSWC, PC				0.890	10/06	2.397	10/07			0.000	3.287	
Common Neutralizer Testing	CPIF	Raytheon Portsmouth, RI		0.874	02/06							0.000	0.874	
Common Neutralizer Test Assets	CPIF	Raytheon Portsmouth, RI		2.103	02/06							0.000	2.103	
Deep Water Neutralizer T&E	CPIF	BAE Systems										0.995	0.995	
Deep Water Neutralizer T&E	WX	NSWC, PC										2.295	2.295	
Subtotal T&E			0.100	2.977		0.948		3.919		0.000		3.290	11.234	
Remarks:														
Program Mangement Support	CPFF	CACI	0.150	0.241	10/05	0.318	10/06	0.162	10/07			0.000	0.871	N/A
Travel	PD	NAVSEA	0.050	0.040	10/05	0.040	10/06	0.040	10/07			0.000	0.170	N/A
Subtotal Management			0.200	0.281		0.358		0.202		0.000		0.000	1.041	
Remarks:														
Total Cost			1.825	8.214		13.222		6.854		0.000		10.132	40.247	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME 4025 Expendable Mine Neutralization System			
Schedule Profile: EMNS	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Contract Award		2Q						
Common Neutralizer Development	1Q-4Q	1Q-3Q						
Integration Development		2Q-4Q	1Q-4Q					
Preliminary Design Review		3Q						
Critical Design Review		4Q						
Contractor / Development Testing		4Q	1Q					
EDM Installation and Checkout			2Q					
TECHEVAL/OPEVAL			2Q-4Q					
Milestone C			3Q					

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification											DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY2013	Cost to Complete	Total Program
Project Cost	**0.000**	**1.380**	**6.176**	**0.000**	**0.000**						
RDT&E Articles Qty											

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

Congressional plus-up. - Surface Navy Integrated Undersea TacticalTechnology (SNIUTT) Investigate development of an AN/SQQ-32, AN/AQS-14, AN/AQS-20A sensor training module for a LAN-based Surface Network Embedded Analysis and Tactical Trainer (SNEATT).

Congressional plus-up. - AN/SQQ-32(V)3 is an aging sonar system (>15 yr.) requiring technological upgrades, eliminating parts obsolescence issues and equipment refreshment or refurbishment. Currently, Naval Sea Warfare Center Panama City is funded to upgrade only the detection capability of AN/SQQ-32(V)3. This add would be used in conjunction with the current effort to further research the upgrade to the detection sonar transducer and investigate and research the upgrade to the classification sonar aspect of the system. Additionally, funding would address modernizing and upgrading the sonar equipment console capability, design, and qualifying system equipment and equipments consoles to augment this upgrade. Funding research study to upgrade AN/SQQ-32(V)3 Classification Sonar, and to provide consultation regarding detection transducer development, and design and quality sonar operator equipment consoles applicable to High Frequency Wide Band (HFWB) program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA -4	0603502N, Surface & Shallow Water MCM	9999 Congressional Adds

CONGRESSIONAL ADDS:

	FY 06	FY 07	FY 08	FY 09
9179 SNIUTT Congressional Adds	1.380	2.590	0.000	0.000
High Frequency Wide Band				

Congressional plus-up. - Surface Navy Integrated Undersea TacticalTechnology (SNIUTT) Investigate development of an AN/SQQ-32, AN/AQS-14, AN/AQS-20A sensor training module for a LAN-based Surface Network Embedded Analysis and Tactical Trainer (SNEATT).

	FY 06	FY 07	FY 08	FY 09
9967N HFWB Congressional Adds	0.000	3.586	0.000	0.000
High Frequency Wide Band				

Congressional plus-up. - AN/SQQ-32(V)3 is an aging sonar system (>15 yr.) requiring technological upgrades, eliminating parts obsolescence issues and equipment refreshment or refurbishment. Currently, Naval Sea Warfare Center Panama City is funded to upgrade only the detection capability of AN/SQQ-32(V)3. This add would be used in conjunction with the current effort to further research the upgrade to the detection sonar transducer and investigate and research the upgrade to the classification sonar aspect of the system. Additionally, funding would address modernizing and upgrading the sonar equipment console capability, design, and qualifying system equipment and equipments consoles to augment this upgrade.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**				R-1 ITEM NOMENCLATURE 0603506N/Surface Ship Torpedo Defense				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**51.562**	**57.509**	**15.967**	**31.722**	**24.867**	**24.028**	**30.622**	**29.203**
Surface Ship Torpedo Defense 0225	**45.049**	**40.473**	**15.967**	**31.722**	**24.867**	**24.028**	**30.622**	**29.203**
Issue 9999 - Congressional Adds	**6.513**	**17.036**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. Mission Description and Budget Item Justification: 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, was 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. Commencing in FY07 Project 0225 commences development of the Common Very Lightweight Torpedo (CVLWT) design as a continuation of the ATT 6 ¾ 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 FY15. 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. Funding to complete the AN/WSQ-11 DCL components and CRAW are currently deferred pending results from both the late FY06 in water DCL DEMO trials and further definition of CRAW requirements. Both the CRAW and AN/WSQ-11 TDS / ATT are closely linked with the ONR FNC programs (Sea Shield FNC's) which provides advance technology inserts at key transition points in support of the planned CRAW and AN/WSQ-11 ATT and DCL schedules.

(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.
(U) Project 9514C - FY06/FY07 Congressional Add: Continues upgrades to the AN/SLQ-25A torpedo countermeasure system as funded by congressional adds. Finalizes in FY07 the resolution of dual tow and mutual interference issues associated with the recent AN/SLQ–25A EEC 16 performance upgrade.
(U) Project 9799N/9799C - FY06/FY07 Congressional Add: Evaluate feasibility of employing wireless technology to coordinate exchange of torpedo defense acoustic detection and tracking information.
(U) Project 9969C - FY07 Congressional Add: Improve TDCL capability to provide a more robust TDCL system.
(U) Project 9968N - FY07 Congressional Add: Develop a sensor for evaluation as to suitability for surface ship torpedo defense.
(U) Project 9970N - FY07 Congressional Add: Continue development of TDCL technology and allow for the integration of the latest improvements into a DDG 51 ship SQQ-89 ASW combat system.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget:	53.133	40.627	31.829	20.045
FY 2008 President's Budget:	51.562	57.509	15.967	31.722
Total Adjustments	(1.571)	16.882	(15.862)	11.677
Summary of Adjustments:				
Undistributed General Reductions	(1.571)	(0.154)	(0.746)	(0.323)
Program Adjustment	0.000	0.000	(15.116)	12.000
Congressional Adds	0.000	17.036	0.000	0.000
Subtotal	(1.571)	16.882	(15.862)	11.677

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603506N/Surface Ship Torpedo Defense	0225/ Surface Ship Torpedo Defense

A. Mission Description and Budget Item Justification:

Project 0225 continues development of components of the AN/WSQ-11 Torpedo Defense System. In FY07 Project 0225 continues development of the Common Very Lightweight Torpedo (CVLWT) design as a continuation of the ATT 6 ¾ EDM-1 design developed under the AN/WSQ-11 TDS project. AN/WSQ-11 TDS development approach espouses an Evolutionary Acquisition strategy of providing incremental surface ship torpedo defense capability to the fleet.

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	37.651	37.722	15.967	31.722
RDT&E Articles Quantity	6 EDM-1	4 EDM-1	N/A	10 EDM-2

COMMON VERY LIGHTWEIGHT TORPEDO (CVLWT)/ANTI-TORPEDO TORPEDO (ATT)

FY06 - Develop CDD requirements. Initiate CVLWT warhead design. Build EDM-1 units (6). Initiate in-water testing (CT 1 - 2) EDM-1 units and post trials analysis. Conduct Torpedo DCL integrated platform display data exchange demo.

FY07 - MS B/ Initiate EDM-2 and warhead development. Build EDM-1 units (4). Conduct CT1-3 and CT1-4 in-water trials. Initiate ATT Launcher development.

FY08- Finalize EDM-2 design. Conduct warhead testing. Continue ATT Launcher development.

FY09- Build EDM-2 units (10). Conduct warhead qualification. Complete ATT Launcher development. Conduct first CRAW in-water trial (CR1-1).

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.098	2.251	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

TRIPWIRE

FY06 - Conduct DCL DEMO final sea trials and post trial analysis.

FY07 - Develop Tripwire sensor and DCL specifications.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.300	0.500	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

AN/WSQ-11 TDS

FY06 - Complete ICD requirements.

FY07 - Complete CDD requirements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI: 221300										
Surface Ship Torpedo Defense - SSTD	29.092	15.529	2.924	10.138	2.308	2.360	4.817	2.442	CONT.	CONT.
WPN BLI: 311300										
Surface Ship Torpedo Defense - SSTD	3.940	5.832	0.013	8.503	4.058	4.054	7.621	2.498	CONT.	CONT.

D. ACQUISITION STRATEGY:

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 FY06 - FY09 time frame. In FY09 - FY11 components of the AN/WSQ-11 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) EDM-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-FY07 WPN procures SSTD acoustic decoy countermeasures for fleet use and Surface Warfare Development Group (SWDG) tactics development. FY09 - FY13 WPN provides CVLWT units for operational evaluation as Multi-Mission/ATT units.

E. MAJOR PERFORMERS:

See Attached R-3

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603506N/Surface Ship Torpedo Defense

PROJECT NUMBER AND NAME: 0225/ Surface Ship Torpedo Defense

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NUWC, Newport, RI		2.568	02/06	2.372	12/06	1.805	12/07	3.200	12/08	CONT.	0.000	
Systems Engineering ATT Dev.	CPFF	PSU/ARL, State College, PA		23.511	12/05	25.991	02/07	8.654	02/08	17.577	02/09	CONT.	0.000	
Systems Engineering	CPFF	JHU/APL, Baltimore , MD		0.420	04/06	0.350	12/06	0.300	02/08	0.300	02/09	CONT.	0.000	
Systems Engineering Warhead Dev.	WR	NSWC, Indian Head, MD		6.300	02/06	6.200	12/06	3.683	12/07	8.500	12/08	CONT.	0.000	
Systems Engineering	WR	NUWC, Keyport,WA		2.680	02/06	1.200	12/06	1.000	12/07	1.295	12/08	CONT.	0.000	
Systems Engineering DCL/ HPS	CPFF	AAC, Hauppauge, NY		1.300	11/05	0.000		0.000		0.000		CONT.	0.000	
Systems Engineering DCL Demo	CPFF	Ultra, Braintree, MA		7.300	10/05	3.500	03/07	0.000		0.000		CONT.	0.000	
Systems Engineering ATT	WR	ONR		0.200	10/05	0.085	01/07	0.000		0.100	10/08	CONT.	0.000	
Subtotal Product Development			0.000	44.279		39.698		15.442		30.972		0.000	0.000	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

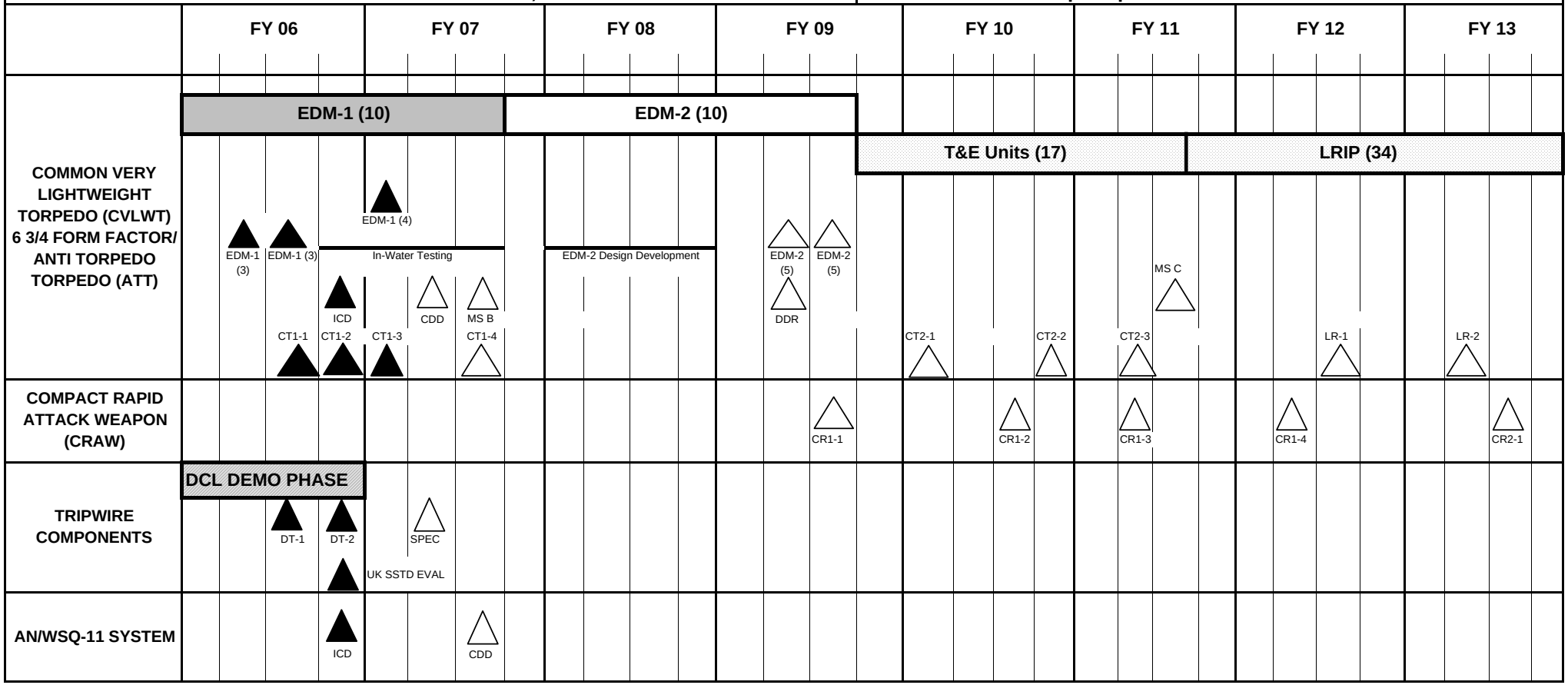
DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	CPFF	EG&G Gaithersburg, Md		0.700	10/05	0.700	11/06	0.500	01/08	0.700	01/09	CONT.	0.000	
Travel		PMS 415		0.070	11/05	0.075	10/06	0.025	11/07	0.050	11/08	CONT.	0.000	
Transportation													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.770		0.775		0.525		0.750		0.000	0.000	
Remarks:														
Total Cost			0.000	45.049		40.473		15.967		31.722		0.000	0.000	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, SCHEDULE PROFILE (page 1)	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **0603506N/Surface Ship Torpedo Defense**



Note: $15.0M reduction in FY08, MS C 3rd Qtr. FY11

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT 0603506N/SURFACE SHIP TORPEDO DEFENSE			PROJECT NUMBER AND NAME 0225/ Surface Ship Torpedo Defense				
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
CVLWT/ ANTI-TORPEDO TORPEDO (ATT)								
INITIAL CAPABILITIES DOCUMENT (ICD)	Q4							
CAPABILITIES DEVELOPMENT DOCUMENT (CDD)		Q2						
BUILD EDM-1 UNITS	Q2, Q3	Q1						
MILESTONE B		Q3						
EDM-2 DESIGN DEVELOPMENT			Q1-Q4					
BUILD EDM-2 UNITS				Q2, Q3				
DESIGN DEVELOPMENT REVIEW (DDR)				Q2				
MILESTONE C						Q3		
IN-WATER TRIALS	Q3, Q4	Q1, Q3			Q1, Q4	Q2	Q3	Q2
COMPACT RAPID ATTACK WEAPON (CRAW								
SUB SYSTEM TESTING				Q3	Q3	Q2	Q2	Q3
TRIPWIRE								
DEMO PHASE	Q1-Q4							
UK SSTD EVALUATION	Q4							
DEMO TRIAL	Q3, Q4							
SPEC		Q2						
AN/WSQ-11								
INITIAL CAPABILITIES DOCUMENT (ICD)	Q4							
CAPABILITIES DEVELOPMENT DOCUMENT (CDD)		Q3						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /		Project Unit (PU) No. and Name: Congressional Plus-Ups : Various

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
0225C				
Low Cost Component Development for Anti-Torpedo Torpedo	2.874	0.000	0.000	0.000

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	FY 07	FY 08	FY 09
9514C				
SLQ-25A Torpedo Countermeasure Improve. Program	1.628	2.889	0.000	0.000

FY06 - Congressional Plus-Up Add addresses the dual tow and mutual interference issues associated with the recent AN/SLQ–25A EEC 16 performance upgrade. Evaluate under the AN/SLQ-25A ROADMAP project feasibility of integrating the AN/SLQ-25A system with a SSTD DCL subsystem.
FY07 - Congressional Plus-Up completes the SLQ-25A roadmap project to integrate the AN/SLQ-25A system under the Open Architect concept within Surface Ship Torpedo Defence Detection Classification Localization subsystem.

	FY 06	FY 07	FY 08	FY 09
9799N/9799C				
Integrated Multi-Platform Sonar system	2.011	4.533	0.000	0.000

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.
FY07 - Congressional Plus-Up to conduct a feasibility demonstration to employ wireless technology to coordination exchange of torpedo defense acoustic detection and tracking information.

	FY 06	FY 07	FY 08	FY 09
9969N				
Torpedo Detection Classification Localization Demo	0.000	0.996	0.000	0.000

FY07 - Congressional Plus-Up Add to conduct an at-sea demonstration to refine the Torpedo Detection Classification Localization capability to improve ship maneuvers and false alarm reduction.

	FY 06	FY 07	FY 08	FY 09
9968N				
Affordable ASW Response Weapon	0.000	1.445	0.000	0.000

FY07 - Congressional Plus-Up Add to continue development of a towed sensor for evaluation as to suitablity for Surface Ship Torpedo Defense.

	FY 06	FY 07	FY 08	FY 09
9970N				
TDCL Commanility - Shipboard DCL Tech Demo & Tr	0.000	7.173	0.000	0.000

FY07 - Congressional Plus-Up Add to continue development of Torpedo Detection Classification Localization technology and allow for the integration of the latest improvements into a DDG 51 class ship to enhance deployment of the ATT.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04**				R-1 ITEM NOMENCLATURE **0603512N - Carrier Systems Development**				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**165.429**	**156.248**	**84.806**	**72.683**	**61.070**	**44.864**	**44.477**	**46.373**
2208 - CVN 21	**106.130**	**58.562**	**46.182**	**57.402**	**59.235**	**43.009**	**42.590**	**44.456**
4004 - EMALS	**54.624**	**58.153**	**36.842**	**13.484**	**0.000**	**0.000**	**0.000**	**0.000**
4005 - Smart Carrier	**1.791**	**1.766**	**1.782**	**1.797**	**1.835**	**1.855**	**1.887**	**1.917**
4006 - CVN 79	**0.000**	**34.828**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
9999/Congressional Adds	**2.884**	**2.939**	**0.000**	**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)(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 78 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 78 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.

- (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. Funding realigned to PE 0604567N project 3179 starting in FY2008.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	**BA-04**	**0603512N - Carrier Systems Development**

- (U) (9515C) - Sentinel Net (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) (9801C) - Continue the integration of the Quiet Interlude Processing System (QuIPS) with the Carrier Tactical Support Center (CV-TSC) version 6.0 software architecture and develop a portable (2-man lift) hardware system to host the integrated software. Develop and integrate data fusion algorithms and software to fuse short range, relatively accurate, time dense tactical sensor ship track data with global, relatively inaccurate, time sparse national sensor ship track data. Develop and integrate data fusion algorithms and software to fuse non acoustic Latitude/Longitude vs. time tracks with acoustic sonar true bearing vs. time tracks output by most Navy sonars. There is a requirement for a portable tactical situational awareness system that can take inputs from multiple sensor types; fuse sensor detection reports, contact reports and tracks into composite tracks; display both independent contacts and composite tracks on a GIS display; and allow operator drill-down capability to underlying metadata. This portable system would support a number of mission scenarios including Antiterrorism, Force Protection and Expeditionary Naval Coastal Warfare. The Program of Record will benefit from the software and hardware developed in support of the repackaging of CV-TSC and additional sensor capability.

- (U) (9801N) -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) (9802N)-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.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 Pres Controls)	168.283	153.894	117.125	106.872
Current BES/President's Budget (FY 08 Pres Controls)	165.429	156.248	84.806	72.683
Total Adjustments	-2.854	2.354	-32.319	-34.189
Summary of Adjustments				
Congressional Increases	0.081	2.950	0.000	0.000
Misc. Changes	-0.139	0.000	0.000	0.000
Congressional Rescissions	0.000	-0.596	0.000	0.000
Programmatic changes	0.000	0.000	-32.319	-34.189
SBIR	-2.796	0.000	0.000	0.000
Subtotal	-2.854	2.354	-32.319	-34.189

C. SCHEDULE: The CVN 78 Basic Construction contract will be awarded in FY08 with delivery in FY15. The CVN 79 Basic Construction contract will be awarded in FY12.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification									DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
Project Cost	**106.130**	**58.562**	**46.182**	**57.402**	**59.235**	**43.009**	**42.590**	**44.456**	
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).

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 2208 - CVN 21**

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	6.471	4.720	0.810	0.010
RDT&E Articles Quantity				

- (U) Non-Nuclear Propulsion Plant Development -
(FY06) Completed CVN 21 Main Turbine Generator (MTG) VRS/EGS voltage/frequency variation testing; continued voltage regulator and electronic governor system schematic development; continued technical manual development; and definitized MTG shock qualification effort.

(FY07) Continue MTG shock qualification effort; continue technical manual development; and complete voltage regulator and electronic governor system schematics.

(FY08) Complete MTG shock qualification; transport/disposition MTG generator to designated storage; and transport/disposition MTG turbine.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	93.740	49.937	40.122	46.617
RDT&E Articles Quantity				

- **(U) CVN 21 Advanced Technology Design & Development** – Continue development and transition of technologies to support CVN 21 Key Performance Parameters (KPPs): maintain sortie generation rate, 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, and to improve overall performance. Technologies and design efforts include, but not limited to:

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

(FY 07) – Finalize 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.

(FY08) - Continue transition planning and execution, including finishing development work, certification/qualification testing, in-service testing, integrated logistics support and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Continue identification of technology opportunities for incorporation into the CVN78.

(FY09) - Continue transition planning and execution, including finishing development work, certification/qualification testing, in-service testing, integrated logistics support and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Continue identification of technology opportunities for incorporation into the CVN78.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 2208 - CVN 21**

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.919	3.905	5.250	10.775
RDT&E Articles Quantity				

- (U) CVN 21 - Test & Evaluation -

(FY06) - Continued 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 have been finalized and provided in TEMP 1610 Rev B (in support of the FY08 construction contract award). DT-A2g (LTA) test report was approved and related models have been updated with plans to accredit in FY07.

(FY07) - The T&E IPT will finalize planning and execution of DT-A2 events and will begin to identify and plan to execute DT-B events to demonstrate that CVN 78 meets required capabilities. Assess CVN 21 Program 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 Program ORD requirements.

(FY08) -Commence DT-B1 test events to include an assessment of DT-A2 data results, begin demonstrating the CVN 78 design will meet requirements, continue PARM interfacing, model and simulation testing, and manage T&E risks. DT-B1 concludes in late FY09 with an test report and Operational Assessment.

(FY09) -Continue DT-B1 and commence DT-B2 T&E planning effort. Execute Developmental Test B1g (LTA II); a full scale weapons effect test to further gain insight into ship responses to combat threats. Continue PARM interfacing, model and simulation testing, and manage T&E risks. DT-B1 concludes in late FY09 with an test report and Operational Assessment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 2208 - CVN 21**

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	762.457	1,106.950	2,848.354	4,470.640	1,620.491	464.957	3,539.599	3,715.132	Cont.	Cont.
0604567N - Ship Contract Design, Live Fire T&E	56.415	51.729	62.404	73.698	69.270	101.536	91.287	90.106	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	165.971	173.988	166.196	158.276	138.891	124.417	124.051	121.840	Cont.	Cont.

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

D. ACQUISITION STRATEGY:

The CVN 78 will be the first ship of the CVN 21 Class of aircraft carriers consisting of 12 ships. 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.

E. 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, VA, Technology Design & Development

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-04**

PROGRAM ELEMENT: **PE 0603512N - Carrier Systems Development**

PROJECT NUMBER AND NAME: **PU 2208 - CVN 21**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development														
Propulsion Plant Development	SS,CPFF	BETTIS, PA	71.627									Continuing	Continuing	
	CPFF	NGNN, VA	153.594	6.456	11/05-4/06	4.360	01/07	0.800	10/07-12/07	0.000	10/08-12/08	Continuing	Continuing	
	Various	Miscellaneous	9.698	0.015	10/06	0.210	10/06-12/06	0.010	10/07-12/07	0.010	10/08-12/08	Continuing	Continuing	
	WX	NSWC Carderock	0.000	0.000		0.150	02/07					Continuing	Continuing	
Advanced Design & Development	CPAF	NGNN	77.219	29.762	10/05-5/06	6.352	11/06	9.016	10/07-12/07	10.872	10/08-12/08	Continuing	Continuing	
	WX	NSWC Carderock	46.196	13.773	11/05-3/06	4.298	10/06-12/06	3.207	10/07-12/07	1.582	10/08-12/08	Continuing	Continuing	
	CPFF	SAIC	24.750	16.520	11/05	5.000	10/06-12/06	3.975	10/07-12/07	2.100	10/08-12/08	Continuing	Continuing	
	WX	NAVAIR	5.403	8.448	11/05-4/06	9.839	10/06-11/06	5.517	10/07-12/07	11.535	10/08-12/08	Continuing	Continuing	
	WX	NAWC Lakehurst	4.871	1.785	10/05-3/06	0.000		0.000		0.000		Continuing	Continuing	
	WX	NSWC Dahlgren	4.393	3.244	10/05-4/06	3.640	10/06	1.400	10/07-12/07	1.821	10/08-12/08	Continuing	Continuing	
	CPAF	Raytheon	0.000	4.370	10/05-3/06	4.694	11/06	8.881	10/07-12/07	11.553	10/08-12/08	Continuing	Continuing	
	WX	NSWC P. H.	5.000	0.210	11/05	0.150	10/06	0.120	10/07-12/07	0.063	10/08-12/08	Continuing	Continuing	
	PD	SPAWAR	3.540	1.479	11/05-4/06	1.789	10/06	0.468	10/07-12/07	0.609	10/08-12/08	Continuing	Continuing	
	CPFF	NAVSEA SEAPORT	0.259	9.456	11/05-5/06	6.680	01/07	2.700	10/07-12/07	1.701	10/08-12/08	Continuing	Continuing	
	Various	Miscellaneous	22.723	4.693	11/05-5/06	7.495	10/06-01/07	4.838	10/07-12/07	4.781	10/08-12/08	Continuing	Continuing	
Subtotal Product Development			429.273	100.211		54.657		40.932		46.627		Continuing	Continuing	

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-04**

PROGRAM ELEMENT: **PE 0603512N - Carrier Systems Development**

PROJECT NUMBER AND NAME: **PU 2208 - CVN 21**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
CVN 21 Class														
	CPAF	NGNN	1.733	0.993	01/06	0.775	11/06	1.042	10/07-12/07	2.138	10/08-12/08	Continuing	Continuing	
	WX	NAWC AD	8.333	0.319	11/05	0.450	11/06-12/06	0.605	10/07-12/07	1.242	10/08-12/08	Continuing	Continuing	
	WX	NSWC Dahlgren	1.226	0.520	11/05	0.335	10/06	0.450	10/07-12/07	0.924	10/08-12/08	Continuing	Continuing	
	WX	NSWC CD	0.835	2.136	11/05	0.000		0.000		0.000		Continuing	Continuing	
	PD	SPAWAR	0.000	0.680	11/05-4/06	0.690	10/07	0.928	10/07-12/07	1.904	10/08-12/08	Continuing	Continuing	
	CPFF	NAVSEA SEAPORT	0.000	0.075	03/06	0.000		0.000		0.000		Continuing	Continuing	
	CPAF	RAYTHEON	0.000	0.214	03/06	0.521	11/06	0.701	10/07-12/07	1.438	10/08-12/08	Continuing	Continuing	
	Various	Miscellaneous	2.569	0.475	11/05	0.587	10/06-01/07	0.924	10/07-12/07	2.529	10/08-12/08	Continuing	Continuing	
Operational Test & Evaluation	WX	COMOPTEVFOR	1.048	0.507	10/05	0.547	11/07	0.600	10/07-12/07	0.600	10/08-12/08	Continuing	Continuing	
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			15.744	5.919		3.905		5.250		10.775		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			445.017	106.130		**58.562**		**46.182**		**57.402**		Continuing	Continuing	
Remarks:														

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

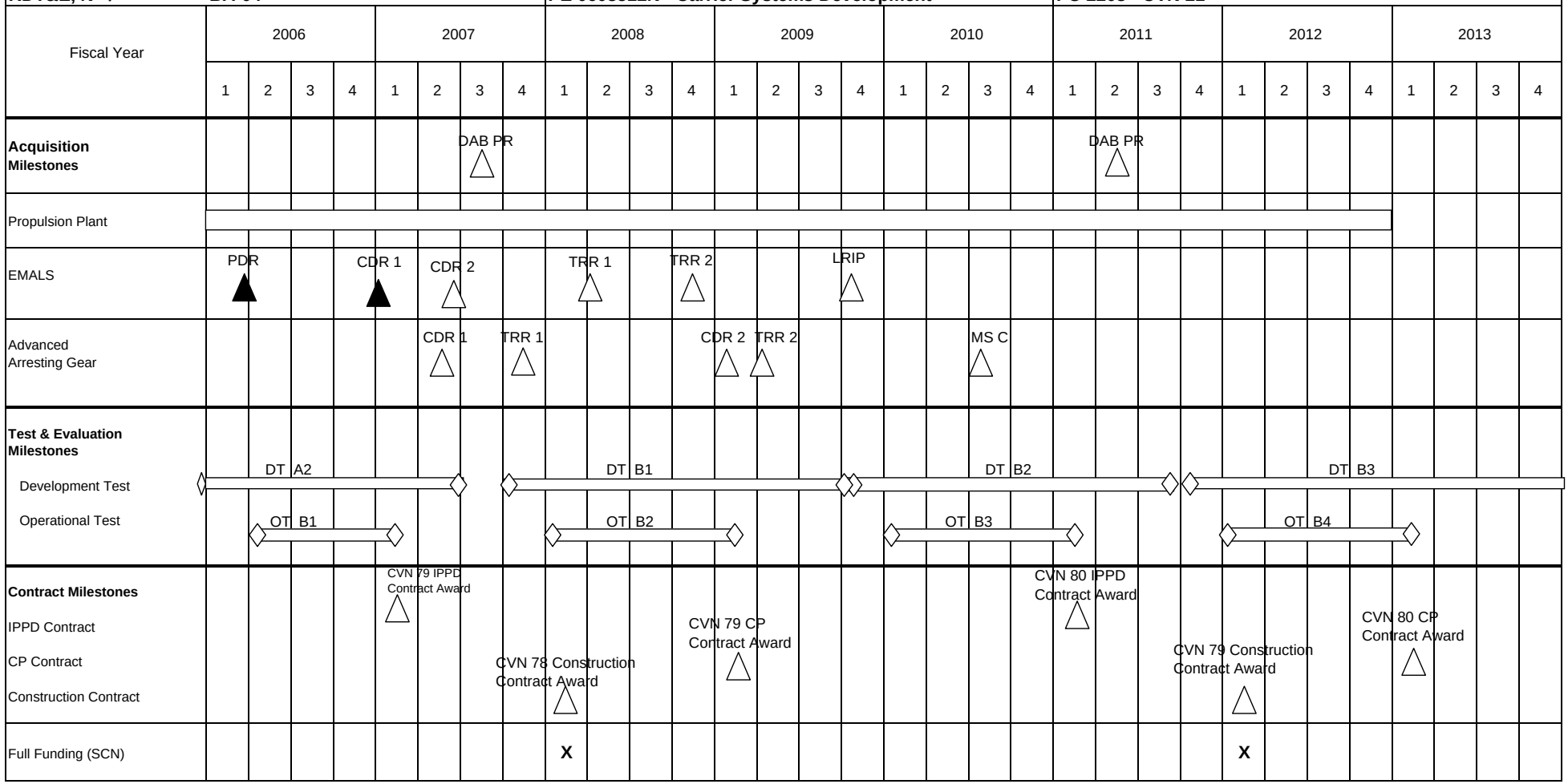
EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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**



R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
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	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Operational Tests OT-B1	2-4Q	1Q						
EMALSP PDR	1Q							
Advanced Arresting Gear CDR 1		1Q						
Developmental Tests DT A-2	1-4Q	1-2Q						
AAG CDR 2			3Q					
EMALS CDR 1		1Q						
EMALS CDR 2		2Q						
Developmental Tests DT-B1		4Q	1-4Q	1-4Q				
Operational Tests OT-B2			1-4Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR		3Q				2Q		
AAG TRR 1 (IT)		3Q						
CVN 21 Construction Contract Award			1Q					
CVN 21 SCN Full Funding			1Q					
Developmental Tests DT-B2				4Q	1-4Q	1-3Q		
Operational Tests OT-B3				4Q	1-4Q	1Q		
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP				4Q				
AAG TRR 2 (IT)				1Q				
Developmental Tests DT-B3						4Q	1-4Q	1-4Q
Operational Tests OT-B4						4Q	1-4Q	1Q
Developmental Tests DT-B4								
Operational Tests OT-B5					1-4Q			
Developmental Tests DT-B3						4Q	1-4Q	
CVN 79 IPPD Contract Award		1Q						
CVN 79 CP Contract Award				1Q				
AAG MS C / LRIP					3Q			
CVN 80 IPPD Contract Award						1Q		
CVN 79 Construction Contract Award							1Q	
CVN 80 CP Contract Award								1Q

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification									DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
Project Cost	**54.624**	**58.153**	**36.842**	**13.484**	**0.000**	**0.000**	**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 78 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.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 4004 - EMALS**

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	54.624	58.153	36.842	13.484
RDT&E Articles Quantity	1			

-(U) EMALS -
FY-06: Continued System Development and Demonstration phase. Conducted Preliminary Design Review and initiated detailed design of shipboard representative system. Completed Critical design review for the Energy Storage Subsystem and Launch Motor Structure. Initiated manufacture of shipboard representative system and design of dead load test articles and instrumentation. Continued CVN 78 integration development. Provided management, systems engineering, test, and ship integration support.

FY-07: Continue System Development and Demonstration phase. Continue shipboard representative system development effort. Complete Critical Design Review for the remainder of the system. Continue manufacture of shipboard representative system and dead load test articles. Initiate installation in the EMALS land based test facility. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support.

FY-08: Continue System Development and Demonstration phase. Continue shipboard representative system development effort. Complete manufacture and installation of a shipboard representative system into the land based test facility. Conduct environmental, high cycle and highly accelerated life testing. Initiate system integration testing. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support. Prepare and relelase the Low Rate Inital Production (LRIP) Request for Proposal (RFP) for four (4) EMALS launchers for CVN-78.

FY-09: Continue System Development and Demonstration phase. Continue shipboard representative system development effort. Complete contrator led system integration testing. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support. Award the LRIP contract.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 4004 - EMALS**

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	762.457	1,106.950	2,848.354	4,470.640	1,620.491	464.957	3,539.599	3,715.132	Cont.	Cont.
0604567N - Ship Contract Design, Live Fire T&E	56.415	51.729	62.404	73.698	69.270	101.536	91.287	90.106	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	165.971	173.988	166.196	158.276	138.891	124.417	124.051	121.840	Cont.	Cont.

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

D. ACQUISITION STRATEGY:

The CVN 78 will be the first ship of the CVN 21 Class of aircraft carriers consisting of 12 ships. 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.

E. MAJOR PERFORMERS:

General Atomics, San Diego, CA, EMALS Design and Development
Naval Air Warfare Center, Aircraft Division, Lakehurst, NJ: EMALS Development and Test.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development														
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	83.352											
	CPAF	General Atomics (PDRR)	82.719											
	CPAF	General Atomics (SDD)	58.158	46.505	1/06 - 12/06	45.000	12/06	27.342	10/07-12/07	7.950	10/08-12/08			
	WX	NAWC Lakehurst, NJ	20.119	4.540	10/05	5.449	11/06	2.500	10/07-12/07	1.500	10/08-12/08			
	CPAF	NGNN, VA	2.536	0.000										
	Various	Miscellaneous	0.577	0.000	1/06-6/06	1.973	11/06	2.000	10/07-12/07	1.034	10/08-12/08			
Subtotal Product Development			247.461	51.045		52.422		31.842		10.484				
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	0.000	0.000

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Aircraft Launch, Recovery & Support	WX	Lakehurst NJ	8.646	3.579	10/05-1/06	5.731	11/06	5.000	10/07-12/07	3.000	10/08-12/08			
Subtotal T&E			8.646	3.579		5.731		5.000		3.000				
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	0.000	
Total Cost			256.107	54.624		58.153		36.842		13.484		Continuing	Continuing	

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

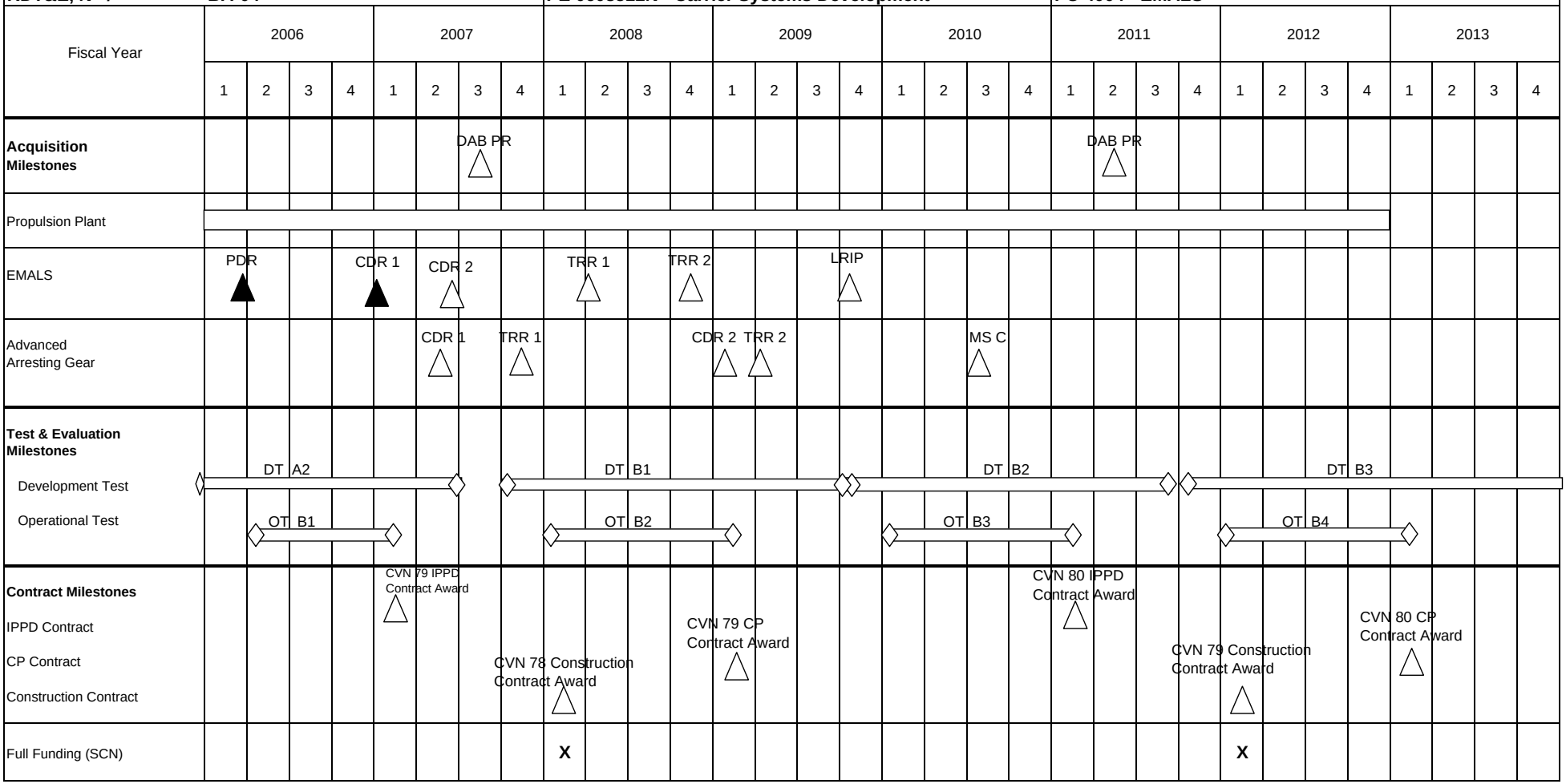
EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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**



R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **PU 4004 - EMALS**			
Schedule Profile	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Operational Tests OT-B1	2-4Q	1Q						
EMALSP PDR	1Q							
Advanced Arresting Gear CDR 1		1Q						
Developmental Tests DT A-2	1-4Q	1-2Q						
AAG CDR 2			3Q					
EMALS CDR 1		1Q						
EMALS CDR 2		2Q						
Developmental Tests DT-B1		4Q	1-4Q	1-4Q				
Operational Tests OT-B2			1-4Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR		3Q				2Q		
AAG TRR 1 (IT)		3Q						
CVN 21 Construction Contract Award			1Q					
CVN 21 SCN Full Funding			1Q					
Developmental Tests DT-B2				4Q	1-4Q	1-3Q		
Operational Tests OT-B3				4Q	1-4Q	1Q		
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP				4Q				
AAG TRR 2 (IT)				1Q				
Developmental Tests DT-B3						4Q	1-4Q	1-4Q
Operational Tests OT-B4						4Q	1-4Q	1Q
Developmental Tests DT-B4								
Operational Tests OT-B5					1-4Q			
Developmental Tests DT-B3						4Q	1-4Q	
CVN 79 IPPD Contract Award		1Q						
CVN 79 CP Contract Award				1Q				
AAG MS C / LRIP					3Q			
CVN 80 IPPD Contract Award						1Q		
CVN 79 Construction Contract Award							1Q	
CVN 80 CP Contract Award								1Q

R-1 SHOPPING LIST - Item No. 35

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**1.791**	**1.766**	**1.782**	**1.797**	**1.835**	**1.855**	**1.887**	**1.917**
RDT&E Articles Qty	**1**	**1**	**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 Advanced Damage Control System (ADCS) software improvements, Electronic Valve Operator automation, Superior Sound Technology, Vibration Monitoring/Rotating Machinery Diagnostic Tools, 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.

R-1 LINE ITEM NUMBER 35

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	**0603512N - Carrier Systems Development**	**PU 4005 - Smart Carrier**

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.791	1.766	1.782	1.797
RDT&E Articles Quantity	1	1	1	1

- (U) Smart Carrier - Fiscal Year 2006 efforts implemented hardware and software changes and completed final system developmental testing for Automated Systems Logs, completed software development and land-based test facility testing and subsequent shipboard testing in USS HARRY S. TRUMAN (CVN75); and began 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 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 GEORGE WASHINGTON (CVN73); and initiate software development for Aviation Fuels System Electric Valve Operator (EVO) automation.

Fiscal Year 2008 efforts will complete ADCS software improvements for installation in USS NIMITZ (CVN68) and continue Aviation Fuels Electric Valve Operator automation, as well as initiate the development and testing of Superior Sound Technologies for shipboard announcing systems.

Fiscal Year 2009 efforts will complete Aviation Fuels Electric Valve Operator automation and the development/testing of Superior Sound Technologies for shipboard announcing systems for implementation in USS RONALD REAGAN (CVN76), and initiate software development of vibration monitoring/rotating machinery diagnostic tools and software development for expanded condition-based maintenance for rotating machinery.

Future efforts include reboiler automation, liguid load management, advanced fire and smoke sensors, and Integrated Condition Assessment System software improvements, all via modifications and improvements to the existing Smart Carrier hardware and software suite.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	**0603512N - Carrier Systems Development**	**PU 4005 - Smart Carrier**	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012*	FY2013	To Complete	Total Cost
098100 Items Under $5 million Smart Carrier (LT 140)	22.666	22.783	13.786	16.816	18.002	12.458	0.000	0.000	0.000	106.511

D. 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).

E. MAJOR PERFORMERS:

Naval Sea Systems Command - Philadelphia (formerly Naval Surface Warfare Center, Carderock Division), Philadelphia, PA performs 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.

*** Smart Carrier merges with the Aircraft Carrier Machinery Plant Upgrades procurement program beginning in FY12**

R-1 LINE ITEM NUMBER 35

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: **0603512N - Carrier Systems Development**

PROJECT NUMBER AND NAME: **PU 4005 - Smart Carrier**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Ship Integration	WX	NAVSEA, Phil.	0.400	0.100	11/05	0.100	11/06	0.120	11/07	0.120	11/08	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			8.583	0.100		0.100		0.120		0.120		0.000	9.023	
Development Support													0.000	
Software Development	WX	NAVSEA, Phil.	2.746	0.841	11/05	0.766	11/06	0.762	11/07	0.777	11/08	Continuing	Continuing	
Training Development	WX	NAVSEA, Phil.	0.180	0.050	11/05	0.080	11/06	0.080	11/07	0.080	11/08	Continuing	Continuing	
Integrated Logistics Support	WX	NAVSEA, Phil.	0.370	0.150	11/05	0.120	11/06	0.120	11/07	0.120	11/08	Continuing	Continuing	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			3.296	1.041		0.966		0.962		0.977		0.000	7.242	

R-1 LINE ITEM NUMBER 35

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

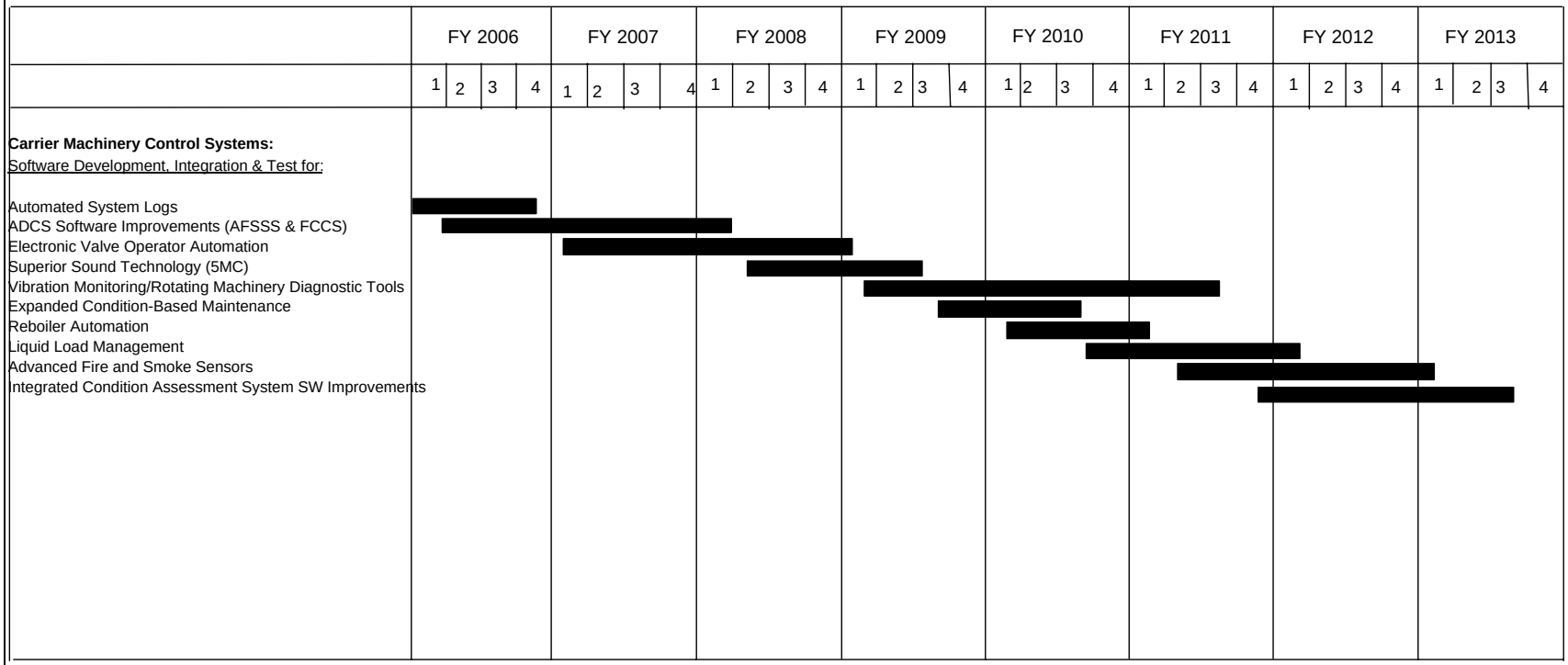
PROGRAM ELEMENT: **0603512N - Carrier Systems Development**

PROJECT NUMBER AND NAME: **PU 4005 - Smart Carrier**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NAVSEA, Phil.	1.150	0.400	11/05	0.450	11/06	0.450	11/07	0.450	11/08	Continuing	Continuing	
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			1.150	0.400		0.450		0.450		0.450		0.000	2.500	
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	WX	NAVSEA, Phil.	0.750	0.250	11/05	0.250	11/06	0.250	11/07	0.250	11/08	Continuing	Continuing	
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.750	0.250		0.250		0.250		0.250		0.000	1.500	
Total Cost			13.779	1.791		1.766		1.782		1.797		0.000	20.915	

R-1 LINE ITEM NUMBER 35

EXHIBIT R-4, Schedule Profile		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	**0603512N - Carrier Systems Development**	**PU 4005 - Smart Carrier**



R-1 LINE ITEM NUMBER 35

Exhibit R-4a, Schedule Detail							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-04**	PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **PU 4005 - Smart Carrier**			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Carrier Machinery Control Systems								
Automated System Logs Software Development Test	1-4Q							
ADCS Software Improvements (AFSSS/FCCS) Software Development	2-4Q	1Q						
ADCS Software Improvements (AFSSS/FCCS) Software Development Test		2-4Q	1Q					
Electronic Valve Operator Automation Software Development		1-4Q	1Q					
Electronic Valve Operator Automation Software Development Test			2-4Q	1Q				
Superior Sound Technology (5MC) Development/Integration			2-4Q	1-3Q				
Vibration Monitoring/Rotating Machinery Diagnostic Tools SW Development				1-4Q	1-2Q			
Vibration Monitoring/Rotating Machinery Diagnostic Tools SW Dev. Test					3-4Q	1-3Q		
Expanded Condition-Based Maintenance - Rotating Machinery				3-4Q	1-3Q			
Reboiler Automation SW/HW Development					1-4Q			
Reboiler Automation SW/HW Development Test						1Q		
Liquid Load Management SW Development/Test					3-4Q	1-4Q	1Q	
Advanced Fire and Smoke Sensor System Development						2-4Q	1Q	
Advanced Fire and Smoke Sensor System Development Testing							2-4Q	1Q
Integrated Condition Assessment System Software Development						4Q	1-3Q	
Integrated Condition Assessment System Software Development Testing							4Q	1-3Q

R-1 LINE ITEM NUMBER 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603512N Carrier Systems Development**	**9999 Congressional Plus-Ups : VARIOUS**

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9515C				
Sentinel Net	0.962	1.644	0.000	0.000

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	FY 07	FY 08	FY 09
9801C (CV-TSC) Quips Integration with CV Tactical				
Support Center	0.000	1.295	0.000	0.000

Continue the integration of the Quiet Interlude Processing System (QuIPS) with the Carrier Tactical Support Center (CV-TSC) version 6.0 software architecture and develop a portable (2-man lift) hardware system to host the integrated software. Develop and integrate data fusion algorithms and software to fuse short range, relatively accurate, time dense tactical sensor ship track data with global, relatively inaccurate, time sparse national sensor ship track data. Develop and integrate data fusion algorithms and software to fuse non acoustic Latitude/Longitude vs. time tracks with acoustic sonar true bearing vs. time tracks output by most Navy sonars. There is a requirement for a portable tactical situational awareness system that can take inputs from multiple sensor types; fuse sensor detection reports, contact reports and tracks into composite tracks; display both independent contacts and composite tracks on a GIS display; and allow operator drill-down capability to underlying metadata. This portable system would support a number of mission scenarios including Antiterrorism, Force Protection and Expeditionary Naval Coastal Warfare. The Program of Record will benefit from the software and hardware developed in support of the repackaging of CV-TSC and additional sensor capability.

	FY 06	FY 07	FY 08	FY 09
9801N				
Quips Integration with CV Tactical Support Center	0.961	0.000	0.000	0.000

The Quiet Interlude Processing System (QUIPS) will provide an automated data fusion system to detect, track, classify, and neutralize threats in the nearshore enviornment. 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	FY 07	FY 08	FY 09
9802N				
Ship Security Perimeter Monioting Using Millimeter	0.961	0.000	0.000	0.000

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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**44.476**	**49.993**	**9.450**	**9.561**	**9.606**	**9.622**	**9.791**	**9.967**
2465/DC/Survivability	**4.009**	**1.893**	**1.701**	**1.736**	**1.772**	**1.790**	**1.821**	**1.852**
2468/Undersea Warfare (USW)	**3.241**	**1.271**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
2469/ Open Systems Architecture (OSA)	**2.362**	**1.764**	**1.626**	**1.669**	**1.710**	**1.751**	**1.779**	**1.811**
2470/Integrated Topside Design (ITD)	**2.530**	**0.475**	**0.415**	**0.420**	**0.431**	**0.435**	**0.442**	**0.449**
2471/Integrated Power Systems (IPS)	**10.580**	**7.115**	**5.708**	**5.736**	**5.693**	**5.646**	**5.749**	**5.855**
4019/Radar Upgrades	**0.000**	**1.563**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Congressional Add increases 9999/Congressional Adds	**21.754**	**35.912**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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 DDG 1000 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 DDG 1000 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.

The following Congressional adds are contained in this Program Element:

FY 06 Congressional Adds-

-Project 9999- Congressional Adds: $21.754-This project consists of the following FY 06 Congressional adds: MTTC/IPI and National Surface Treatment Center, Amorphous metal permanent magnet generator, Carbon Foam program, Intelligent Systems Consortium NASEA-Carderock/SHSU, Alternative composition-low cost pipe for shipboard application, Flash detection system for Navy 501 shipboard engines, Integrated power distribution system for next generation all-electric ship, Smart machinery spaces system, and Water mist fire protection systems.

FY 07 Congressional Adds-

-Project 9999- Congressional Adds: $35.912-This project consists of the following FY 07 Congressional adds: MTTC/IPI and National Surface Treatment Center, Carbon Foam program, Intelligent Systems Consortium NASEA-Carderock/SHSU, Smart machinery spaces system, Water mist fire protection systems, Advanced combatant materials reserach, Advanced fluid controls for shipboard applications, Advanced repair technology for expeditionary navy, Advanced steam turbine, Air gun shock testing of naval vessels, Braided ropes for US Navy Ship salvage, Carrier strike group forward sensor network, Critical on demand infomation support for shipboard maintenance, Fuel contaminate detection system, High efficiency quiet electric drive, Integrated power system converter, Propulsor manufacturing technology development and Smart valve.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development

B. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:(FY 07 Pres Controls)	50.918	14.135	16.686	16.828
Current President's Budget: (FY08 Pres Controls)	44.476	49.993	9.450	9.561
Total Adjustments	-6.442	35.858	-7.236	-7.267
(U)Summary of Adjustments				
Congressional Reprogramming	-6.950			
Congressional undistributed adjustments	-0.209	-0.192	0.026	0.105
Congressional rescissions	-0.090			
SBIR/STRR Transfer	-0.270			
Reprogrammings	1.119			
Technical Adjustment			-5.592	-5.679
Undistributed general reductions			-0.003	-0.010
Congressional Add increases		36.050		
Program adjustments	-0.042		-1.667	-1.683
Subtotal	-6.442	35.858	-7.236	-7.267

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**4.009**	**1.893**	**1.701**	**1.736**	**1.772**	**1.790**	**1.821**	**1.852**
RDT&E Articles Qty	**0**	**0**	**0**	**0**		**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds development of DDG 1000 specific 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) development of electrical fault isolation control methods that enable the rapid detection and isolation of combat-induced faults ensuring an effective DC response after damage, 2) wireless machinery control system technologies that will reduce installation costs through the elimination of wires and significantly increase the survivability of control systems ensuring the availability of mission critical systems following damage, and 3) development of electromagnetic signature reduction technologies that provide for jamming sweep resistant magnetic influence mines using advanced degaussing and impressed cathodic protection systems and a closed-loop deamping system that uses existing cathodic protections systems to reduce the near field electric signatures emanating from a steel hulled surface ship.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.265	0.300	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06, initiated development of fault isolation control system approaches/ algorithms for medium voltage electrical systems that enable bus level combat induced faults to be rapidly isolated ensuring power to combat systems. Complete development in FY 07 and transition to the DDG 1000 program.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.225	0.800	0.701	0.522
RDT&E Articles Quantity	0	0	Congressional Add increases	0

(U) In FY 06 through 07, develop wireless machinery control system approaches and architectures that significantly improve survivability and reduce installation costs through the eliminatio of cabling. In FY 06, conducted a study to quantify the cost savings associated with wireless control and perfomed a live fire demonstration to assess the impact on fire and smoke on wireless transmission. In FY 07 through FY 09, install a wireless control system aboard a decommissioned ship and demonstrate long term performance

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.304	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06 completed development of a low cost prototype shock testing device for qualifying COTS equipment. Transition to DDG 1000.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.215	0.793	1.000	1.214
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06 demonstrated a control system upgrade to the advanced degaussing system aboard DDG 76, USS Higgins that provided for a low electromagnetic signature during ship rolling conditions by reducing eddy currents ; finalize software in FY 07 and transition to DDG 1000 and LPD -17 programs.

In FY 06 completed development of an initial rapid prototype that identified safe operating areas as a function of mine threat . In FY 07 complete rapid prototype code development.

In FY08 initiate development of advanced electromagnetic (EM) signature reduction technologies including development of a closed-loop deamping system that reduces the near field electric signature and technologies that provide for jamming magnetically influenced mines. In FY 08 through FY 09, transition the ONR sponsored Organic Mine Jamming effort and develop algorithms that will generate jamming signals using existing shipboard EM reduction systems. In FY 08 and 09 conduct an EM ship vulnerability assessment for the electric mine threat and develop closed loop deamping system performance requirements and a preliminary system architecture.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

C. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U) MAJOR PERFORMERS:

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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 2465/DC/Survivability

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF	DDG 1000 Design Agent	1.500	0.000	N/A	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	24.193	4.009	12/05	1.893	12/06	1.701	12/07	1.736	12/08	CONT	CONT	
	Various	Other Contractors	5.251	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	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			30.944	4.009		1.893		1.701		1.736		CONT	CONT	1.500

Congressional Add increases

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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 2465/DC/Survivability

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	N/A	0.000	0.234	0.234
Government Engineering Support	VAR	Othe Gov't Activities	0.835	0.000	N/A	0.000	N/A	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	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	N/A	0.000	0.121	
SBIR Assessment														
Subtotal Management			1.265	0.000		0.000				0.000		0.000	1.265	0.234
Remarks:														
Total Cost			32.209	4.009		1.893		1.701		1.736		CONT	CONT	1.734
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROJECT NUMBER AND NAME 2465/DC/Survivability

Fiscal Year	2006				2007				2008				2009				2010				2011				2012			2013			
	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	1	2	3	4

Non-ACAT Engineering Milestones

Surviable Medium Voltage Electrical Systems

Medium Voltage System Fault Isolation Devel — Transition to DD 1000 Program

Automation and Wireless Controls

Congressional Add increases

Survivable Wireless Control System Development — Transition to CG (X) Program

Shock Qualification Systems

Prototype Device — Transition to DD 1000 Program

Dev Eddy Current Upgrade

Conduct Demonstrations/ Rangings — Transition to LPD-17, DD1000 Programs

Develop Mine Decision Aid

Software Development — Transition to DD 1000/ LPD 17 Programs

Dev Mine Jamming/ Deamping Technology

Advanced Electromagnetic Signature Reduction Technologies/ Architecture

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2465/DC/Survivability			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Develop Med Voltage Control Algorithms	1-4Q (prelim)	1-4Q(final)						
Conduct Wireless Control System Live Fire Demo	1-3Q							
Develop Wireless Control System Architectures		1-4Q						
Conduct Wireless Control Shipboard Demonstrations			1-4Q	1-4Q				
Transition COTS Shock Qual'n Test Device Prototype	1-4Q							
Develop Eddy Current Compensation Algorithm	1-4Q (prelim)	1-4Q(final)						
Conduct Eddy Current Demonstration(s)	1-4Q							
Develop Mine Decision Aid Rapid Prototype	1-3Q (prelim)	1-4Q(final)						
Develop Mine Jamming Algorithms			1-4Q (prelim)	1-4Q(final)				
Conduct Mine Jamming Shipboard Demonstrations		Congressional Add increases			1-4Q	1-4Q		
Integrate Mine Jamming and Adv Degaussing Systems							1-4Q	1-4Q
Conduct De-Amping System Threat Assessment			1-4Q					
Develop Prelim De-Amping System Architecture				1-4Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**3.241**	**1.271**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**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 DDG 1000 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. FY 2006 and subsequent efforts will focus on major technological and performance thrusts for DDG 1000 USW, which will define surface combatant USW capability for the Navy in the next century. These efforts will continue beyond DDG 1000 and provide improvements that apply across surface ship USW platforms.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.744	0.113	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) FY06, continued 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.872	0.509	0.000	0.000
RDT&E Articles Quantity	0	0	Congressional Add increases	0

(U) IUSW-21 ADM/EDM Development - Performed Integrated Peer Group (IPG) engineering reviews of IUWS-21 advanced technologies. In FY06, developed and integrated IUSW and Peer Review advanced technologies into ADM/EDM demonstration system for FY07 sea testing. In FY07, complete the development and integration of candidate techologies for FY07 sea test.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.625	0.649	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY06, procured and prepared 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U) ACQUISITION STRATEGY:

(U) In Contract Phase IV responsibility for IUSW ADM/EDM development for the FY06 and FY07 lake tests will be with the DDG 1000 Design Agent.

E. (U)MAJOR PERFORMERS:

(U) Government Field Activities - Naval Undersea Warfare Center, Newport, Ri .

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.362**	**1.764**	**1.626**	**1.669**	**1.710**	**1.751**	**1.779**	**1.811**
RDT&E Articles Qty	**0**	**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 (MOSA) 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.

Congressional Add increases

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.506	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Common Family of Ships (FOS) Business/Technical Architecture and Technology Management: FY06: Business Case/Architecture for common modular systems and standard interfaced.

	FY 06	FY 07	Congressional Add increases	FY 09
Accomplishments/Effort/Subtotal Cost	1.255	0.320	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Offboard Vehicle Zone, FY06-07: Interfaces.
B. Open C&C Zone, FY06-FY07: Interface Implementation Cross Platform.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.275	0.451	0.300	0.326
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Sensors Zone: FY06-FY07 Concept development., FY07-09 Architecture Development, FY09 Interface Development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.555	0.593
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Machinery Zone: FY08-09 Architecture Concept.

	FY 06	FY 07	Congressional Add increases	FY 09
Accomplishments/Effort/Subtotal Cost	0.326	0.993	0.771	0.750
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Weapons/Power Projection Zone: FY 06: Architecture developed, FY07-08: Interface development, FY09: Interface Implementation

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U)MAJOR PERFORMERS:

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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DDG 1000 Industry Teams	35.327	0.000	N/A	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	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	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	N/A	0.000	2.735	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	38.062

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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

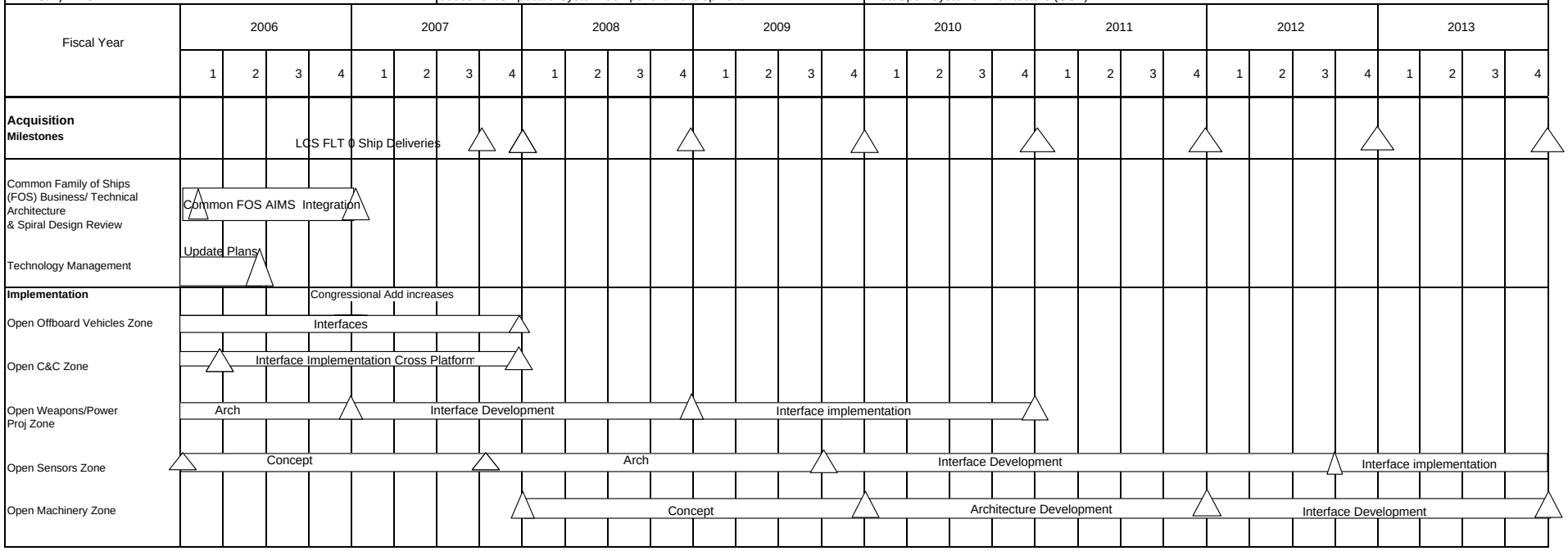
PROGRAM ELEMENT: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 2469/Open Systems Architecture (OSA)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	9.032	0.235	10/05	0.224	10/06	0.000	N/A	0.000	N/A	0.000	9.498	
Government Engineering Support	WX	NSWC CD Philadelphia, PA	3.763	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	3.763	
	WX	NSWC Carderock, Md.	4.634	1.428	10/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	6.062	
	Various	Other Gov't Activities	32.060	0.699	Various	1.540	Various	1.626	Various	1.669	Various	CONT	CONT	
Program Management Support														
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			49.489	2.362		1.764		1.626		1.669		CONT	CONT	
Remarks:														
Total Cost			102.561	2.362		1.764		1.626		1.669		CONT	CONT	38.062
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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)



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603513N Shipboard System Component Developmen				PROJECT NUMBER AND NAME 2469/ Open Systems Architecture (OSA)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Business/Technical Architecture								
Common FOS AIMS Modularity Integration Complete	1Q-4Q	1Q						
Technology Management:								
Update TM plans	2Q							
Implementation								
Open Offboard Vehicles Zone:								
Open Offboard Vehicles Zone Interfaces Defined	1Q-4Q	1Q-4Q						
Open Command and Control Zone								
Open C&C Zone Interfaces Implemented Cross-Platform	1Q-4Q	1Q-4Q						
Open Weapons/Power Projection Zone:								
Open Weapons Zone Arch Complete	1Q-4Q	Congressional Add increases						
Open Weapons Zone Interfaces Defined		1Q-4Q	1Q-4Q					
Open Weapons Zone Interfaces Implemented				1Q-4Q	1Q-4Q			
Open Sensors Zone:								
Open Machinery Zone Concept Complete	1Q-4Q	1Q-4Q						
Open Machinery Zone Arch Complete		4Q	1Q-4Q	1Q-4Q				
Open Machinery Zone Interfaces Defined				4Q	1Q-4Q	1Q-4Q	1Q-3Q	
Open Machinery Zone Interface Development							4Q	1Q-4Q
Open Machinery Zone								
Open Sensors Zone Concept Complete			1Q-4Q	1Q-4Q				
Open Sensors Zone Architecture Complete					1Q-4Q	1Q-4Q		
Open Sensors Zone Interfaces Defined							1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.530**	**0.475**	**0.415**	**0.420**	**0.431**	**0.435**	**0.442**	**0.449**
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 DDG 1000 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.999	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

FY 06: Completed V2.0 Topside RF Coupling D&A M&S Tool; Released V12.1 RTS M&S Tool; Released V3.3 ShipIR M&S Tool.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.091	0.475	0.415	0.420
RDT&E Articles Quantity	0	0	Congressional Add increases	0

FY06: Released Ver 3.0 Advanced Antenna Design and Analysis (D&A) M&S Tool ; Released V3.0 Frequency Selective Surface D&A M&S Tool.
FY07: Release Ver 4.0 Advanced Antenna Design and Analysis (D&A) M&S Tool
FY08: Start Ver 5.0 Advanced Antenna Design and Analysis (D&A) M&S Tool Development
FY09: Release Ver 5.0 Advanced Antenna Design and Analysis (D&A) M&S Tool

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.440	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

FY06: Issued Revised Composites Joint Design Guide; Issued revised Fire safety rules and guidelines

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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)OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U) MAJOR PERFORMERS:

(U)Government Field Activities-Naval Research Laboratory, Washington DC, and Space and Naval Warfare Systems Center, San Diego, Ca.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**10.580**	**7.115**	**5.708**	**5.736**	**5.693**	**5.646**	**5.749**	**5.855**
RDT&E Articles Qty	**0**	**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 DDG 1000, DDG 1000 future flight upgrades, and CG(X) being the primary ship application target. On 6 January 2000, SECNAV announced Navy intent that DDG 1000 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2471/Integrated Power Systems

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.946	5.150	2.226	2.496
RDT&E Articles Quantity	0	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. Performed preliminary design of high-speed generators and initiated detailed design with follow-on prototype fabrication planned.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.034	1.392	Congressional Add increases	2.940
RDT&E Articles Quantity	0	0	0	0

System Test: Conducted 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 DDG 1000 and future ship classes including CG(X). Conduct demonstrations to show improved performance and potential to reduce combat system costs.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.600	0.573	0.300	0.300
RDT&E Articles Quantity	0	0	0	0

Platform Specific: Developed 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 forCG(X), 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2471/Integrated Power Systems	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	5.736	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U)ACQUISITION STRATEGY:

(U) IPS is a candidate system for DDG 1000 and all other future surface ships.

E. (U)MAJOR PERFORMERS:

(U) IPS DDG 1000 Design Agent, Ingalls Shipbuilding Iinc. General Atomics and DRS Power and Controls Technologies Inc., IPS IFTP contractors. Curtiss Wright, High Speed Generator contractor. Northrop-Grumman Electronic Systems, power electronics contractor.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 2471/Integrated Power Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed M Syracuse, NY	23.572	0.000	01/00	0.000	N/A	0.000	N/A	0.000	N/A	0.000	23.572	23.572
	Sec845/804	DDG 1000 Industry Teams	66.661	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	66.661	66.661
	CPAF	DDG 1000 Design Agent	154.500	0.000	N/A	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	N/A	0.000	1.350	1.350
	Sec845/804	IFTP Teams	53.482	0.429	10/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	53.911	
	C/CPAF	Anteon, Corp. Fairfax, VA	3.303	1.378	10/05	0.900	10/06	0.700	10/07	0.700	10/08	CONT	CONT	
	WX	NSWCCD Philadelphia, PA	24.665	0.722	10/05	0.540	10/06	0.589	10/07	0.605	10/08	CONT	CONT	
	WX	NSWCCD Dahlgren, Va.	2.826	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.826	
	Various	Other Contractors	10.053	0.000	10/05	0.050	10/06	0.050	10/07	0.050	10/08	CONT	CONT	
	Various	Other Govt Activities	1.895	0.000	10/05	0.050	10/06	0.050	10/07	0.050	10/08	CONT	CONT	
	C/CPFF	CW-EMD, Cheswick, PA	0.000	4.460	10/05	5.100	10/06	3.159	10/07	2.160	10/08	CONT	CONT	
	C/CPFF	NGES, Sunnyvale, CA	0.000	2.686	12/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.686	
Ancillary Hardware Development		Congressional Add increases												
Systems Engineering														
Licenses														
Tooling														
GFE														
Award Fees	C/CPAF	Anteon, Corp. Fairfax, VA	0.109	0.055	3Q/06	0.037	3Q/07	0.037	3Q/08	0.037	3Q/09	CONT	CONT	
Subtotal Product Development			342.416	9.730		6.677		4.585		3.602		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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 2471/Integrated Power Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC CD Philadelphia, PA	18.777	0.820	01/00	0.408	10/06	1.093	10/07	2.104	10/08	CONT	CONT	
Operational Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			18.777	0.820		0.408		1.093		2.104		CONT	CONT	

Remarks:

Congressional Add Increases

Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel	Various	Various	0.574	0.030	10/05	0.030	10/06	0.030	10/07	0.030	10/08	CONT	CONT	
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.574	0.030		0.030		0.030		0.030		CONT	CONT	

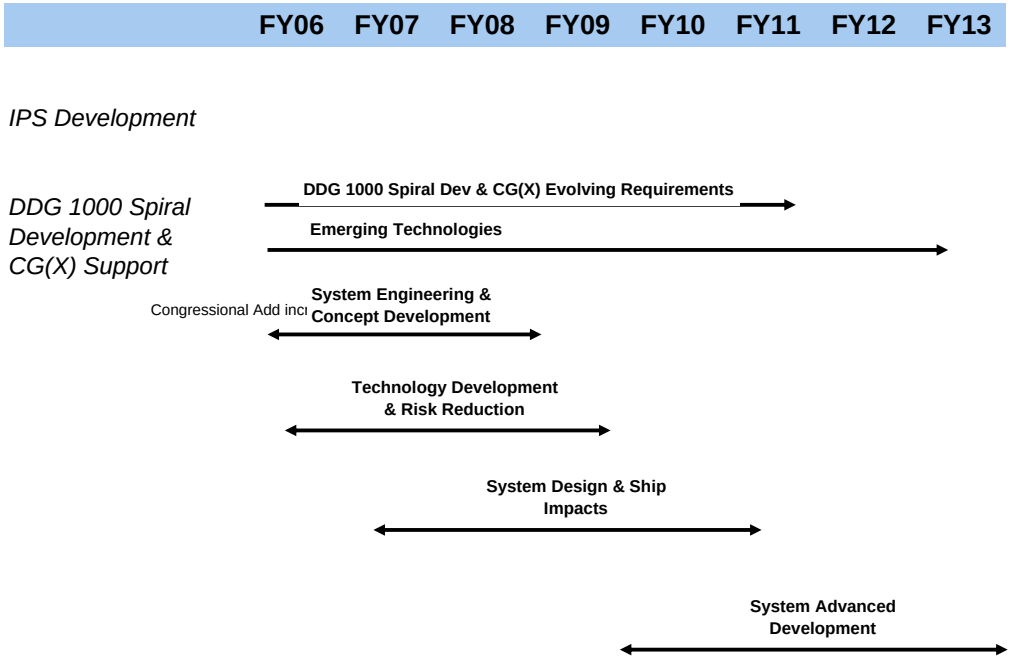
Remarks:

Total Cost			361.767	10.580		7.115		5.708		5.736		CONT	CONT	246.803

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2471/Integrated Power Systems			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
						01/00		
System Engineering & Concept Development	1Q-4Q	1Q-4Q	1Q-4Q					
Technology Development & Risk Reduction	2Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q				
System Design & Ship Impact		3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q		
System Advanced Development				3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
		Congressional Add increases						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**1.563**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	4019/Radar Upgrades

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.679	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

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

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.784	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

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

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.100	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	4019/Radar Upgrades	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U)ACQUISITION STRATEGY:

(U)

E. (U)MAJOR PERFORMERS:

(U) Northrop Grumman Ship Systems, Raytheon and Lockheed Martin.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
2858C				
MTTC/IPI and National Surface Treatment Center	6.900	3.885	0.000	0.000

(U) This Congressional add funded a continued operation of the McConnell Technology and Training Center and the National Surface Treatment Center (MTTC). This effort funded projects targeted at resolving fleet maintenance problems/issues through the rapid insertion of new technologies.

	FY 06	FY07	FY08	FY09
9517C				
Amorphous metal permanent magnet generator	0.986	0.000	Congressional Add increases	0.000

(U) Funded the development of designs for an Amorphous Metal Permanent Magnet Generator Set and related technologies. Developed technology for smaller, lighter generator sets employing amorphous metal permanent magnets had the potential to greatly increase power rating, yet reduced the size and weight of the generator set. Such generator technology also held the potential for reduced life cycle costs by increased fuel efficiency and reduced logistics support costs.

	FY 06	FY07	FY08	FY09
9518C				
Carbon foam program	1.932	2.789	0.000	0.000

(U) This effort for the Carbon Foam program focused on the development of uses for lightweight, strong, fire resistant and thermally insulating carbon foam material aboard Navy ships. The application of this material may provide improved characteristics that will enable a requirement objective or threshold to be exceeded improving performance of a ship and ship class.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9521C				
Intelligent Systems Consortium NAVSEA-Carderock	0.986	0.996	0.000	0.000

(U) This Congressional add continued to fund the Intelligent Systems Consortium NAVSEA Carderock with the U.S. offshore energy industry to focus on the development of intelligent shipboard electro-mechanical devices in support of the Navy's all-electric ship concept, reduced manning requirements and future seabasing needs.

	FY 06	FY07	FY08	FY09
9523C				
Alternative composition, low cost pipe for shipboard	1.676	0.000	Congressional Add increases	0.000

(U) This effort for Alternative composition, low cost pipe for shipboard was funded to qualify Glass-Reinforced Plastic (GRP) piping for shipboard use. Current metallic piping corrodes or erodes and does not last over the ship life cycle. The development of erosion resistant GRP or composite piping leads to longer service life when used in appropriate ship systems.

	FY 06	FY07	FY08	FY09
9803N				
Flash detection system for Navy 501 shipboard eng	1.479	0.000	0.000	0.000

(U) Flash detection system was funded to research and develop health-monitoring algorithms for Gas Turbine engines. The Flash Detection System utilized the already developed optical flash detector to monitor the Gas Turbine exhaust operation for abnormalities that are used in identifying engine problems. Observation of the Gas Turbine exhaust provided useful information on the operation characteristics and health of the engine helped to reduce failure and schedule maintenance.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9805N/9805C				
Integr power distribution sys for next gen all-elec shp	2.915	0.000	0.000	0.000

This Congressional add funded the development of integrated power distribution systems for future surface combatants that allow for rapid response to electrical system load demands.

	FY 06	FY07	FY08	FY09
9807N/9807C				
Smart machinery spaces system	3.894	2.740	Congressional Add increases	0.000

This effort for Smart machinery spaces system focused on the development of a comprehensive, automated “Condition-Based Maintennace (CBM)+” solution that incorporates Configuration Management (CM), CBM, and Automated Logistics functions.

	FY 06	FY07	FY08	FY09
9808N/9808C				
Water mist fire protection systems	0.986	0.996	0.000	0.000

This Congressional add funded the Water mist fire protection systems to test Navy standard water mist fire protection system to commercial standards, so that system can be marketed commercially.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9971N				
Advanced combatant materials research	0.000	4.284	0.000	0.000

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	FY07	FY08	FY09
9972N				
Advanced fluid controls for shipboard applications	0.000	0.996	Congressional Add increases	0.000

The congressional add for Advanced fluid controls for shipboard applications will help develop materials, including composites and ceramics, for a variety of fluid control solutions that focus on providing intelligent control and interface directly with the ship's main computer.

	FY 06	FY07	FY08	FY09
9973N				
Advanced repair technology for expeditionary Navy	0.000	0.996	0.000	0.000

Congressional add funding is provided in support of the Advanced Repair Technology for Expeditionary Navy Program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9974N				
Advanced steam turbine	0.000	0.996	0.000	0.000

Funding for Advanced Steam Turbine is to develop advance technologies resulting in a quieter, smaller turbine generator for the US Navy.

	FY 06	FY07	FY08	FY09
9975N				
Air Gun Shock Testing of naval vessels	0.000	0.996	Congressional Add increases	0.000

The congressional add will help develop a low cost, environmentally safe underwater shock testing method employing non-explosive energy sources suitable for shock testing the ship or shock qualifying major shipboard systems.

	FY 06	FY07	FY08	FY09
9976N				
Braided Ropes for US Navy Ship Salvage	0.000	0.996	0.000	0.000

The purpose of the Braided Ropes for US Navy Ship Salvage funding is to develop and test a stronger, more reliable and more efficient means for lifting, mooring and rigging of ships, barges, and aircraft during salvage search, recovery and towing operations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9977N				
Carrier Strike Group Forward Sensor Network	0.000	3.885	0.000	0.000

The congressional add for Carrier Strike Group Forward Sensor Network will help develop an integrated, limited area communication and force protection capability for ports and strike group ships within near line of sight utilizing a wireless mesh network comprised of ships and buoys with sensor systems.

	FY 06	FY07	FY08	FY09
9978N				
Critical on demand info spt for shipboard maintainence	0.000	0.996	Congressional Add increases	0.000

The congressional add for Critical on Demand Information Support for Shipboard Maintainers is for development of mobile, hand-held information technology and technical tool for shipboard maintenance personnel. The tool supports wireless networking, technical data access and display, collaboration through resource sharing and live video and audio capability and diagnostic tools.

	FY 06	FY07	FY08	FY09
9979N				
Fuel Contaminate Detection system	0.000	2.491	0.000	0.000

The congressional add for Fuel Contaminate Detection system will help develop sensors and detection system that will identify combustion air and fuel contaminates that can cause premature gas turbine engine failures.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9980N				
High Efficiency Quiet Electric Drive	0.000	1.494	0.000	0.000

Funding for High Efficiency Quiet Electric Drive will be used to develop and demonstrate an advanced propulsion motor drive by utilizing a hybrid power electronics approach.

	FY 06	FY07	FY08	FY09
9981N				
Integrated Power System Converter	0.000	0.996	Congressional Add increases	0.000

Funding for Integrated Power System Converter will be used to develop integrated power system propulsion motor drive power electronics technologies for future surface combatants that allow for rapid response to electrical system load demands.

	FY 06	FY07	FY08	FY09
9982N				
Propulsor Manufacturing Technology Development	0.000	4.234	0.000	0.000

The Congressional add for propulsor Manufacturing Technology Development is to develop coatings for propellers to improve erosion resistance, fouling resistance and efficiency characteristics.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9983N				
Smart valve	0.000	1.146	0.000	0.000

The Congressional add for Smart Valve will help develop linear electromechanical actuator technology to help eliminate high pressure hydraulic and pneumatic systems in a shipboard environment.

			Congressional Add increases	

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**				R-1 ITEM NOMENCLATURE 0603542N/Radiological Controls				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost								
Project Unit 1830/RADIAC Development	**1.809**	**1.894**	**1.546**	**1.096**	**0.896**	**0.948**	**0.967**	**0.987**
RDT&E Articles Qty	**40**	**75**	**51**	**17**	**2**	**2**	**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 all cases a technology refresh will make both economic sense and provide increased operational capabilities.

Naval Nuclear Propulsion Program (NNPP): Instruments are developed to support the safe operation and maintenance of nuclear powered vessels and at nuclear maintenance facilities.

Non-NNPP: Instruments are developed to support other than NNPP end users, such as Explosive Ordnance Disposal, Weapons, Medical, Industrial Radiography and Training.

Expanded Maritime Intercept Operations (EMIO): The Navy has been tasked to intercept and board vessels at sea to search for nuclear or radiological materials that could be used for terrorist attacks. These instruments would have different characteristics than those used for NNPP and non-NNPP purposes and prototypes must be developed and/or tested and evaluated.

The AN/PDR-65 Ship Board Monitoring System is obsolescent and will be replaced.

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603542N/Radiological Controls	1830/RADIAC Development

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.640	0.550	0.400	0.400
RDT&E Articles Quantity	20	20	6	6

Continue Multi-Function RADIAC (MFR) development and testing of prototype units and probes for Neutron, Radiography, Transuranic X-ray, Underwater, and Training Simulators for the Naval Nuclear Propulsion Program (NNPP). Develop Next Generation Survey Meter. Articles are prototypes for evaluation.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.400	0.351	0.240	0.185
RDT&E Articles Quantity	20	20	10	10

Develop and test calibration software, survey instruments, dosimeters and associated probes for non-NNPP end uses, to include Explosive Ordnance Disposal (EOD) and Radiological and Nuclear Defense (RND). Develop Next Generation Survey Meter. Articles are prototypes for evaluation.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		0.250	0.206	
RDT&E Articles Quantity		30	30	

Develop and test instruments for Expanded Maritime Intercept Operations (EMIO). Articles are prototypes for evaluation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603542N/Radiological Controls	1830/RADIAC Development

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.250	0.243	0.200	
RDT&E Articles Quantity		5	5	

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

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.519	0.500	0.500	0.511
RDT&E Articles Quantity				1

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

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 Pres Bud Controls)	1.818	1.901	1.711	1.237
Current Budget: (FY08 Pres Bud Controls)	1.809	1.894	1.546	1.096
Total Adjustments	-0.009	-0.007	-0.165	-0.141
Summary of Adjustments				
Congressional Action	0.001			
SBIR	-0.008			
Cancelled Accounts Liability	-0.002			
Revised Economic Forecast		-0.007		
Environmental Mission Funding			-0.032	-0.024
Miscellaneous Reductions			-0.143	-0.139
Miscellaneous Additions			0.010	0.022
Subtotal	-0.009	-0.007	-0.165	-0.141

Schedule:

Technical:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603542N/Radiological Controls	1830/RADIAC Development	

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI 292000 RADIAC	13.008	12.671	10.205	9.954	9.209	9.429	9.613	9.802	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 Primary Contracting Officer.
Orbis, Inc. In Service Engineering Agent (ISEA) services.
DoE Remote Sensing Laboratory. Development of Next Generation Air Particle Detector.

*** 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 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/FP	Various	10.417	0.500	05/06	0.350	06/07	0.169	02/08	0.200	01/09		11.636	
Ancillary Hardware Development													0.000	
Component Development													0.000	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering			1.100										1.100	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			11.517	0.500		0.350		0.169		0.200		0.000	12.736	

Remarks:

Development Support	WX	NSWC Carderock	1.975	0.379	11/05	0.450	11/06	0.450	11/07	0.450	11/08		3.704	
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			1.975	0.379		0.450		0.450		0.450		0.000	3.704	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	SPAWARSYSCEN Chasn.	4.508	0.062	10/05								4.570	
Operational Test & Evaluation	WX	Various	0.329	0.018	03/06	0.141	12/06	0.150	01/08	0.150	01/09		0.788	
Live Fire Test & Evaluation													0.000	
Test Assets													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			4.837	0.080		0.141		0.150		0.150		0.000	5.358	
Remarks:														
Contractor Engineering Support	C/FP	Orbis Inc., Charleston, SC	0.200	0.590	11/05	0.593	12/06	0.461	11/07	0.225	11/07		2.069	
Government Engineering Support			5.045										5.045	
Program Management Support			5.376										5.376	
Travel			0.345	0.010		0.010		0.010		0.010			0.385	
Labor (Research Personnel)	IPR	DoE Remote Sensing Lab	0.000	0.250	03/06	0.350	11/06	0.306	11/07	0.061	11/08		0.967	
SBIR Assessment													0.000	
Subtotal Management			10.966	0.850		0.953		0.777		0.296		0.000	13.842	
Remarks:														
Total Cost			29.295	1.809		1.894		1.546		1.096		0.000	35.640	
Remarks:														

EXHIBIT R-2, RDT&E Budget Item Justification

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4

R-1 ITEM NOMENCLATURE
PE 0603553N Surface ASW/1704 ASW Advanced Development

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**33.006**	**34.017**	**25.560**	**30.541**	**36.549**	**29.907**	**51.763**	**51.895**
ASW Advanced Development/1704	**26.821**	**28.588**	**25.560**	**30.541**	**36.549**	**29.907**	**51.763**	**51.895**
9999N/Congressional Adds	**6.185**	**5.429**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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 2006 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 in FY07, the ASW Cross Functional Team (formally known as Task Force ASW) initiative will include new and innovative technologies. These technologies 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 net-centric Undersea Warfare (USW) 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 ASW CFT initiative.

The MAASW project conducts advanced development and testing of active multistatic acoustic concepts. The concept development focus on 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.

The ASW Cross Functional Team (CFT) initiative is a focused effort to identify the most promising ASW technologies through a process of discovery, assessment, experimentation, and analysis. CFT 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 CFT'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.

Project Unit 9999 is comprised of FY06 Congressional Adds for Improved Surface Vessel Torpedo Launcher, Automated Readiness Measurement System, Continuous Active Sonar, Medium Offboard Distributed Acoust Sensors, Advanced Receive While Transmit Sonar and All Electric Torpedo Launcher.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget	23.433	38.696	42.284	45.622
FY 2008 President's Budget	33.006	34.017	25.560	30.541
Total Adjustments	9.573	-4.679	-16.724	-15.081
Undist. General/Cong. Provisions	-0.077	-0.129	0.176	0.294
Congressional Program Reductions		-10.000		
Congressional Increases		5.450		
Reprogrammings	9.950			
SBIR/STTR Transfer	-0.300			
Program Adjustments			-3.049	-3.024
Pricing Adjustments			-0.421	-0.421
Technical Adjustments			-13.430	-11.930
Subtotal	9.573	-4.679	-16.724	-15.081

Schedule: Not Applicable
Technical: Not Applicable

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE 0603553N Surface ASW	1704 ASW Advanced Development	

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
MAASW/Distant Thunder/Subtotal Cost	2.000	2.230	0.000	0.000
RDT&E Articles Quantity				

MAASW/Distant Thunder - Conducted Government Acceptance Test and integrated of MAASW/DT SQR-19 functional segment to open systems architecture to support SQQ-89 A(V)15 combat system. In the process of the development of MFTA software engines , and will integrate in to an open systems architecture in FY07. 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. 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.

	FY 2006	FY 2007	FY 2008	FY 2009
Cross Functional Team (CFT) /Subtotal Cost	24.821	26.358	25.560	30.541
RDT&E Articles Quantity				

Cross Functional Team (CFT) - Conducted first CFT experiment of promising and innovative ASW technologies, collected and analyzed data, and reported results. Planned and conducted second CFT 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. FY07-FY09 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.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA4	PE 0603553N Surface ASW	1704 ASW Advanced Development	

C. OTHER PROGRAM FUNDING SUMMARY: N/A

D. ACQUISITION STRATEGY: *

Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

E. MAJOR PERFORMERS: **

Naval Air Warfare Center Aircraft Division, Patuxent River, MD – Maintain and install the two Air Multi-static 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.
Naval Undersea Warfare Center, Newport, RI – Provide management support in working with various administrative and operational organizations to develop and implement teams for MAASW DT development and evaluation. Support laboratory and at-sea testing of DT processor algoriothms for ship installations. Perform planning, execution, and analysis of experiments.
Johns Hopkins University Applied Physics Laboratory, Laurel, MD - Participate in experiment planning, execution, and analysis and lead the SSEMP effort.

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Multi-static Sonar Development	WR	NUWC Newport	5.668	0.199	12/05	1.015	12/06	0.000		0.000			6.882	
Multi-static Sonar Development	WR	SUPSHIP Bath Min.	0.021										0.021	
Multi-static Sonar Development	WR	PASCAGOULA MS	0.017										0.017	
Multi-static Sonar Development	WR	NAWC/Key West	0.010										0.010	
Multi-static Sonar Development	WR	NAWC/Paxuxent River	1.674	0.230	12/05	0.000	12/06	0.000		0.000			1.904	
Multi-static Sonar Development	CPFF	BBN	3.685	0.218	11/05	0.785	11/06	0.000		0.000			4.688	
Multi-static Sonar Development	CPFF	APL/JHU	0.350										0.350	
Multi-static Sonar Development	RCP	FLT. Industry SUP Center	0.010										0.010	
Multi-static Sonar Development	RCP	ONR	0.472										0.472	
Various	Various	Various	0.701	0.255	01/06	0.430	01/07	0.000		0.000			1.386	
Subtotal Product Development			12.608	0.902		2.230		0.000		0.000			15.740	
Remarks:														
Developmental Test & Evaluation	WR	NUWC/Newport	2.905	0.206	11/05	0.655	11/06	0.000		0.000			3.766	
Developmental Test & Evaluation	WR	NAWC/Pax River	1.461	0.173	11/05	0.170	11/06	0.000		0.000			1.804	
Developmental Test & Evaluation	CPFF	BBN	1.323	0.250	11/05	0.300	11/06	0.000		0.000			1.873	
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	0.174	0.000	11/05	0.150	11/06	0.000		0.000			0.324	
Developmental Test & Evaluation	CPFF	Various	0.625	0.165	11/05	0.366	11/06	0.000		0.000			1.156	
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			11.802	0.794		1.641		0.000		0.000			14.237	
Remarks:														

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA4**

PROGRAM ELEMENT: PE 0603553N Surface ASW

PROJECT NUMBER AND NAME: 1704 ASW Advanced Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
At-Sea Test/Experiment (CFT)	C/CPFF	JHU/APL, MD	5.100	5.500	10/05	4.000	10/06	4.000	10/07	4.000	10/08	Continuous	Continuous	
At-Sea Test/Experiment	WX	NAVSEA/NEWPORT, RI	10.300	8.000	10/05	6.684	10/06	8.577	10/07	9.000	10/08	Continuous	Continuous	
At-Sea Test/Experiment	RCP	ONR/ANTEON	0.930										0.930	
At-Sea Test/Experiment	RCP	ONR/BAE	1.800										1.800	
At-Sea Test/Experiment	RCP	ONR		5.000									5.000	
Enhanced Data Collection (SSEMP)	C/CPFF	JHU/APL, MD	2.000	2.000	10/05	2.000	10/06	0.000	10/07	0.000	10/08	Continuous	Continuous	
Enhanced Data Collection														
and Analysis (SSEMP)	Various	Various	3.761	1.000	10/05	1.000	10/06	0.000	10/07	0.000	10/08	Continuous	Continuous	
Technology Development	C/CPFF	Various		3.225		5.633		9.000		16.847				
Analysis & Assessment	Various	Various				5.000		3.583		0.294				
Subtotal T&E			23.891	24.725		24.317		25.160		30.141		0.000	7.730	
Remarks:														
Contractor Engineering Support														
SBIR														
Government Engineering Support														
Program Management Support	CPFF	Stanley Assoc.	1.021	0.350	01/06	0.350	01/07	0.350	01/08	0.350	01/09	Continuous	Continuous	
Program Management Support	CPFF	Anteon Corp.	0.125	0.000		0.000		0.000		0.000		Continuous	Continuous	
Travel			0.160	0.050	11/05	0.050	11/06	0.050	11/07	0.050	11/08	Continuous	Continuous	
Labor (Research Personnel)														
Overhead														
Subtotal Management			1.306	0.400		0.400		0.400		0.400		Continuous	Continuous	
Remarks:														
Total Cost			49.607	26.821		28.588		25.560		30.541		Continuous	Continuous	
Remarks:														

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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	2006				2007				2008				2009				2010				2011				2012				2013			
	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
MAASW																																
Conduct At Sea Test (MAASW) *Test processor algorithm, tactics, CONOPS, and conduct crew training*																																
At Sea Test Analysis and System Evaluation *Analyze processor algorithm, tactics, CONOPS*																																
Processor Improvements *Develop improved processor algorithm, tactics, and CONOPS*																																
ASW - CFT																																
Technology Development																																
Develop promising technologies from government labs, university research centers, and industry																																
Industry Solicitation *Multiphase approach to identifying the most promising technologies*																																
Conduct At-Sea Experiment *Test promising technologies*																																
Analyze Experimental Data *Evaluate performance of technologies, potential for providing capability, readiness for transition*																																
SSEMP																																
Conduct data collection and analysis of selected exercises																																

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

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA4**	PROGRAM ELEMENT PE 0603553N Surface ASW				PROJECT NUMBER AND NAME 1704 ASW Advanced Development			
Schedule Profile	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Conduct At Sea Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Sea Test Analysis and System Evaluation	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Development Test & Evaluation	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
At Sea Test Experiment	3Q	2Q	1Q-4Q	3Q	2Q	1Q-4Q	2Q	1Q-4Q

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RD RDT&E, N / BA4	PE 0603553N Surface ASW	9999 Congressional Plus-Ups : VARIOUS	

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9185C	2.218	1.345		
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	FY 07		
9809C	0.000	1.793		
Automated Readiness Measurement System (ARMS)				

Funds will be used to continue development of an ARMS to include the following: Preliminary and Critical Design Reviews (PDR/CDR) to promulgate the ARMS system design/architecture; development of a Software Requirement Specification (SRS) describing the requirements to be implemented in ARMS software by developing specific requirements for spiral 0; design of ARMS System Architecture as a System Design Document (SDD); establishment of a software development facility consisting of the hardware, software and configuration management tools required to develop the ARMS system; development of ARMS software to execute on designated target hardware as described in the design documentation; laboratory integration and testing of the ARMS system through engineering analysis, and informal and formal test, including the development of test documentation and reports; integrate testing concurrent with USW-DSS testing for

	FY 06	FY 07		
9809N	0.481	0.000		
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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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	FY 07		
9810N	2.523	0.000		
Continuous Active Sonar				

This Congressional Add will assist the acceleration of concept evaluation and transition, possibly via both backfit to existing ASW platforms and forward fit to emergent manned and unmanned ASW assets.

	FY 06	FY 07		
9811N	0.963	0.000		
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,, allowing larger sensor numbers, longer duration, and over the horizon operations, in contrast to existing sonobuoys.

	FY 06	FY 07		
9984N	0.000	0.996		
Advanced Receive While Transmit Sonar				

The funds would be used to develop low frequency capability of this new technology and conduct at-sea testing. This builds upon the work being done under the FY06 congressional plus-up that developed a mid-frequency capability. This project addresses critical shortfalls in ASW detection range as well as time delays to classify and track threat submarines resulting from the proliferation of quiet, technologically advanced platforms in the hands of nations that might chose to deny us freedom of the seas. It has application to both open ocean and littoral area operations. The added funding 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.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RD RDT&E, N / BA4	PE 0603553N Surface ASW	9999 Congressional Plus-Ups : VARIOUS	

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9985N	0.000	1.295		
All Electric Torpedo Launcher				

Funds will be used to study the feasibility of replacing the Surface Vessel Torpedo Tube (SVTT) with an Advanced Electromagnetic Launcher (AEL), primarily for use on the new DDG-1000 an Littoral Combat Ship (LCS) Anti-Submarine Warfare (ASW) Mission Packages. The AEL is a new design that uses electromagnetic launch technology to achieve silent launch of the torpedo.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification				DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**		R-1 ITEM NOMENCLATURE PE 0603559N SSGN DESIGN					
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Total PE Cost	**23.198**	**25.855**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
SSGN Design/2413	**23.198**	**25.855**	**0.000**	**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

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBE		PROJECT NUMBER AND NAME
RDT&E,N/BA-4	PE 0603559N	SSGN	2413 SSGN Design

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007
Previous President's Budget (FY 2007 President's Budget Control):	23.660	25.953
Current BES/President's Budget (FY 2008/2009 President's Budget Control):	23.198	25.855
Total Adjustments	(0.462)	(0.098)
Summary of Adjustments		
Revised Economic Assumption	0.005	(0.098)
Congressional Action 1% Reduction	0.012	
SBIR Tax	(0.449)	
Cancelled Accounts Liabilities	(0.030)	
Subtotal	(0.462)	(0.098)

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**		PROJECT NUMBER AND NAME 2413 SSGN Design

B. Accomplishments/Planned Program

	FY 06	FY 07			
Accomplishments/Effort/Subtotal Cost	0.920	0.180			
RDT&E Articles Quantity					

U) FY06 - 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 06	FY 07			
Accomplishments/Effort/Subtotal Cost	21.485	25.576			
RDT&E Articles Quantity					

(U) FY06 - 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**		PROJECT NUMBER AND NAME 2413 SSGN Design

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07			
Accomplishments/Effort/Subtotal Cost	0.793	0.099			
RDT&E Articles Quantity					

(U) FY06 - 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).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E,N/BA-4	PE 0603559N SSGN	2413 SSGN Design	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
(U)BLI 201700 /SSGN CONVERSION SCN	282.613	0.000	0.000	0.000	0.000	0.000	0.000	282.613

D. 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.

E. 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

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603559N SSGN

PROJECT NUMBER AND NAME: 2413 SSGN Design

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	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					
Design Studies/Misc.	SS/CPFF	Electric Boat, Groton, CT	51.136	0.920	Nov-05	0.180	N/A	0.000	52.236	52.236				
Systems Engineering	WX	NSWC Carderock, MD	20.054	2.633	Oct-05	0.405	Oct-06	0.000	23.092	N/A				
Systems Engineering	WX	NUWC, Newport, RI	24.621	3.566	Oct-05	0.868	Oct-06	0.000	29.056	N/A				
MAC Launcher	PD	SSP/Various	90.754	0.000	N/A	0.000	N/A	0.000	90.754	N/A				
Attack Weapon Control System	PD	SSP/Various	24.402	0.000	N/A	0.000	N/A	0.000	24.402	N/A				
Facilities/SE&I/Training/Procedures &	PD	SSP/Various	10.788	0.000	N/A	0.000	N/A	0.000	10.788	N/A				
MAC Launcher/AWCS/SE&I/Facilitie	C/CPFF	JHU/APL, Laurel, MD.	8.347	0.000	N/A	0.000	N/A	0.000	8.347	8.347				
Systems Engineering	Various	Various	20.270	1.550	Various	3.171	Various	0.000	24.990	N/A				
Misc.	Various	Various	0.972	0.550	Various	0.152	Various	0.000	1.674	N/A				
Subtotal Product Development			251.344	9.219		4.776		0.000	265.339					

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603559N SSGN

PROJECT NUMBER AND NAME: 2413 SSGN Design

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	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	2.133	3.247	Oct-05	2.176	Oct-06	0.000	7.556	N/A				
Developmental Test & Evaluation	WX	NUWC, Newport, RI	2.885	2.365	Oct-05	1.833	Oct-06	0.000	7.083	N/A				
Developmental Test & Evaluation	RC/WR	NAVAIR Patuxent River, MD	0.080	0.000	Oct-05	0.000	Oct-06	0.000	0.080	N/A				
Developmental Test & Evaluation	Various	NSWC, Dalgren	0.000	0.060	Various	0.054	Various	0.000	0.114	N/A				
Developmental Test & Evaluation	Various	ANTEON	0.000	0.550	Various	0.850	Various	0.000	1.400	N/A				
Live Fire Test & Evaluation	WX	NSWC, Carderock, MD	2.332	0.610	Oct-05	0.945	Oct-06	0.000	3.887	N/A				
Live Fire Test & Evaluation	Various	SSP	0.000	0.000	Various	0.045	Various	0.000	0.045	N/A				
Operational Test & Evaluation	WX	COMOPTEVFOR	0.653	0.228	Oct-05	3.053	Oct-06	0.000	3.934	N/A				
Operational Test & Evaluation	WX	NUWC, Newport, RI	12.669	1.679	Oct-05	0.130	Oct-06	0.000	14.478	N/A				
Operational Test & Evaluation	WX	NAVAIR Patuxent River, MD	1.141	2.985	Oct-05	10.108	Oct-06	0.000	14.234	N/A				
Operational Test & Evaluation	Various	Perot	0.000	0.000	N/A	0.062	Various	0.000	0.062	N/A				
Miscellaneous	Various	Various	0.438	0.000	Various	0.000	Various	0.000	0.438	N/A				
Subtotal T&E			22.331	11.724		19.256		0.000	53.311					

Remarks:

Contractor Engineering Support	C/MAC	Various	11.544	2.255	Feb-05	1.822	Nov-05	0.000	15.622	15.622				
Government Engineering Support														
Program Management Support	Various	Various	1.745	0.000	N/A	0.000	N/A	0.000	1.745	1.745				
Labor (Research Personnel)														
Overhead														
Subtotal Management			13.289	2.255		1.822		0.000	17.367					
Total Cost			286.964	23.198		25.855		0.000		0.000	336.017			

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

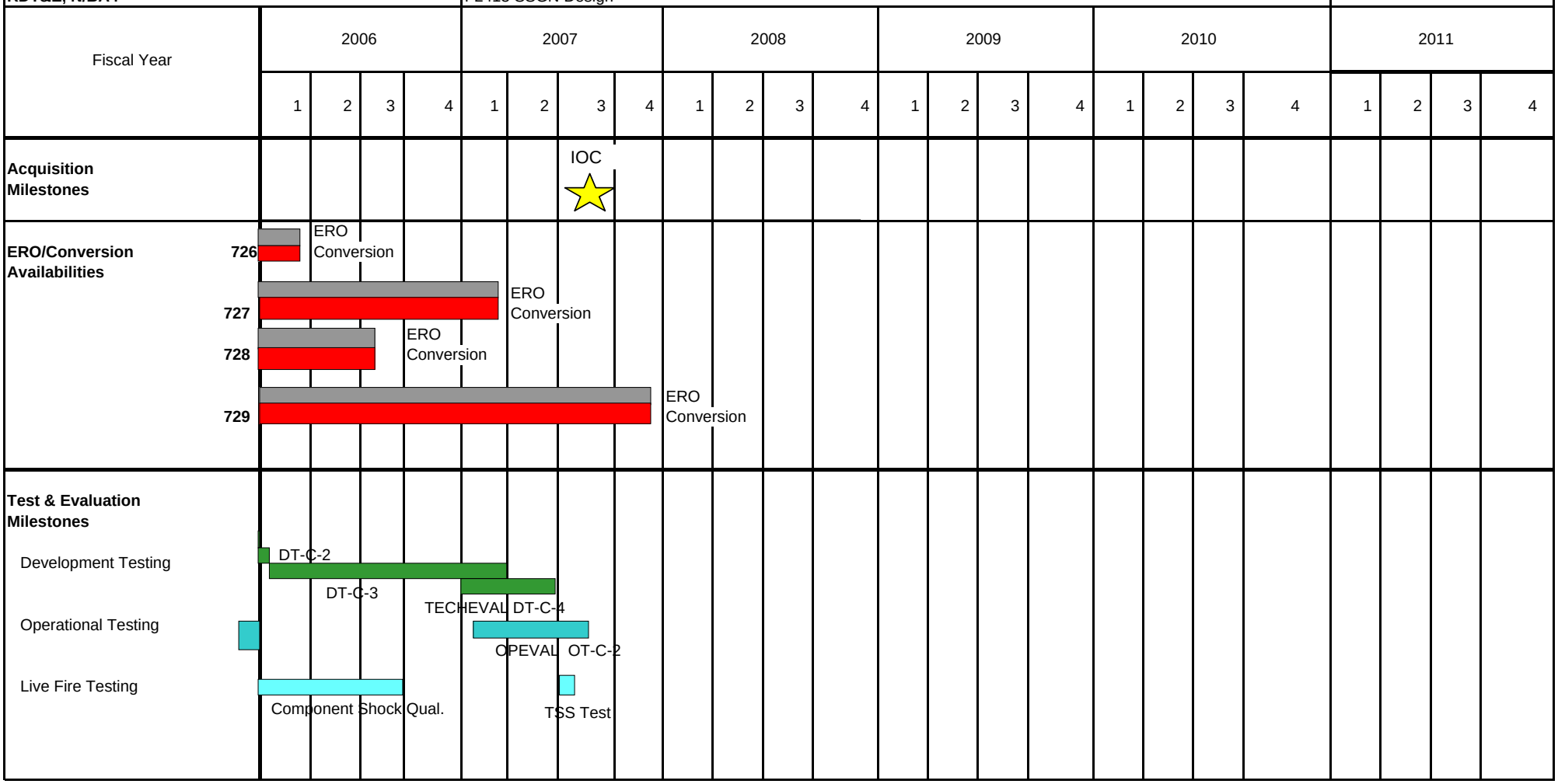
DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N/BA4

PROJECT NUMBER AND NAME

F2413 SSGN Design



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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail		DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA4**	PROJECT NUMBER AND NAME F2413 SSGN Design					
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
726 ERO	1Q					
726 Conversion	1Q					
Developmental Testing (DT-C-2)	1Q					
Developmental Testing (DT-C-3)	1Q-4Q	1Q				
Component Shock Qualification Testing	1Q-3Q					
Technical Evaluation (DT-C-4) (TECHEVAL)		1Q-2Q				
Total Ship Survivability Test		3Q				
Operational Evaluation (OT-C-2) (OPEVAL)		1Q-3Q				
IOC		3Q				
727 ERO	1Q-4Q	1Q				
727 Conversion	1Q-4Q	1Q				
728 ERO	1Q-3Q					
728 Conversion	1Q-3Q					
729 ERO	1Q-4Q	1Q-4Q				
729 Conversion	1Q-4Q	1Q-4Q				

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE Advanced Submarine System Development/0603561N			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**158.115**	**156.875**	**134.882**	**143.050**	**155.335**	**138.511**	**127.936**	**115.084**
Adv. Sub. Systems Development/2033	**77.275**	**85.032**	**81.659**	**97.875**	**105.259**	**85.094**	**75.080**	**61.250**
Adv. Sub. Combat Sys. Dev/0223	**59.972**	**54.758**	**53.223**	**45.175**	**50.076**	**53.417**	**52.856**	**53.834**
Issue 9999 - Congressional Adds	**20.868**	**17.085**	**0.000**	**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 (FNCs).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-acquisition 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 TRIALS. 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-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE Advanced Submarine System Development/0603561N	

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 tactical 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, battle space 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/combat control systems. Advanced Sonar Arrays develop tests and new sensors and demonstrates large array configuration. Program is funded under demonstration and validation, as it develops and integrates hardware for experimental test related to specific platform applications.

Project Unit 9999 is comprised of FY06 congressional adds for Experimental Research Transformational Submersible and Inner, Outer Decoupler Materials for Hull Array, Fiber Optic Conformal Acoustic Velocity System, Submarine Tactical Monitor, and SSGN Unmanned Undersea Vehicle Integration Program.

Project Unit 9999 is also comprised of FY07 congressional adds for Experimental Research Transformational Submersible and Inner & Outer Decoupler Materials for Hull Array, Cryogenic Power System for Unmanned Underwater Vehicle (UUV), Fiber Optic Conformal Acoustic Velocity,and Large Displacement UUV At Sea Launch & Recovery.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033 & 0223/Advanced Submarine Systems Development

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY2009
FY07 President's Controls	140.431	140.432	158.361	164.053
FY08 President's Controls	158.115	156.875	134.882	143.050
Total Adjustments	17.684	16.443	-23.479	-21.003
Summary of Adjustments				
Tango Bravo Follow-on			-2.500	-5.500
DARPA Study				-3.200
Restructure Ad			-9.600	-11.400
NAVSEA - NWCF			-0.058	-0.047
Congressional Project Adds	21.700	17.085		
Miscellaneous Congressional Actions	0.098	-0.642		
Delay TB-16 NG			-1.500	-1.500
Small Business Innovation	-3.517			
Technical Correction			0.453	0.544
BRAC Changes				0.069
Regional Maritime Awareness	-0.418			
Miscellaneous Budget Changes	-0.179		-10.274	0.031
Subtotal	17.684	16.443	-23.479	-21.003

Schedule: not applicable.

Technical: not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2033/Adv. Sub. Systems Development	**77.275**	**85.032**	**81.659**	**97.875**	**105.259**	**85.094**	**75.080**	**61.250**
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 (FNCs).

Project Unit 2033: The Advanced Submarine Research and Development (R&D) Program is a non-Acquisition 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 war fighting pillars, SEA BASE, SEA SHIELD, FORCENET, and SEA STRIKE. Focus is also on SEA TRIAL. SEA TRIALS emphasize war fighting 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 war fighting context with other services, i.e. the U.S. Marines, U.S. Army, and the U.S. Air Force, enable early assessment of war fighting capabilities contributing to better technology selection decisions for potential spiral development. This program also supports Information Exchange Programs with the United Kingdom and Canada until FY10.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

	FY 06	FY07	FY08	FY09
Payloads and Sensors/Subtotal Cost	22.835	16.630	19.751	25.410
RDT&E Articles Quantity				

Develop promising technologies and/or concepts capable of revolutionizing submarine design, reducing cost, 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.

FY06 Accomplishments include the following: Conducted land-based vertical launch of a small missile in Nov 05. Used 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 (UAV) or any small missile. Completed the Rotary Electromagnetic Launch (REML) Energy Storage System (ESS) and Battery Management Systems design. REML prototyoe launch motor delivered and started integration testing. Performed full-scale static and fatigue test of representative full-scale Composite Advanced Sail section and validated against analytical techniques. Performed shock test of foam filler material for composite structures. Performed impact test to determine residual strength of composite structural components. Updated report to Congress on "Submarine Technology Insertion."

FY07 Planned Accomplishments include the following: Conduct an underwater encapsulation demonstration applicable to small missile or UAVs. Provide analytical support to the Joint Test and Evaluation (JT&E) program Joint Command and Control for War on Terror Activities (JC2WTA). Complete REML full-scale integration test and conduct land based concept demonstration test. Develop final design guidance for designing non-pressure hull structural components from composite materials. Conduct for the Concentric Canister Launch (CCL) missile fly-out test from a submerged platform to demonstrate water-piercing technology. Update report to Congress on "Submarine Technology Insertion."

FY08 Planned Accomplishments include the following: Conduct a demonstration of an underwater launch of an encapsulated All-Up Round (AUR) against a surface target in a test range. Conduct an at-sea demonstration of the procedures developed and technologies selected under the JT&E program JC2WTA. Conduct the CCL missile fly-out test to demonstrate water-piercing technology. Conduct technical review of CCL missile fly-out test data (from FY07); assess the feasibility of water-piercing technology. Provide Go/No Go recommendations. Develop Composite Advanced Structures with the goal of reducing weight and enabling use of acoustic treatments in complex composite structures at minimal cost without sacrificing performance. Update report to Congress on "Submarine Technology Insertion."

FY09 Planned Accomplishments include the following: Use results of the underwater launch of an encapsulated AUR to prepare for an at-sea demonstration launching an encapsulated small missile at a surface target from a submarine. Prepare and procure long lead items for at-sea full scale demonstration of CCL. Demonstrate reduced weight complex submarine composite structures.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

	FY 06	FY 07	FY08	FY09
Stealth/Subtotal Cost	14.741	10.714	14.908	15.900
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.

FY06 Accomplishments include the following: Continued Large Scale Vehicle operations and maintained LSV and ISMS test ranges. Completed level one qualification testing of Conformal Acoustic Velocity Sensor (CAVES) outer decoupler material. Initiated development of CAVES inner decoupler material. Developed interface requirements for tactical decision aid for mine susceptibility. Supported development plan to investigate direct radiation phenomena and it's relation to external flow noise.

FY07 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Complete CAVES outer decoupler level two and begin inner decoupler level one qualification. Perform scale measurements to support investigation of direct radiation phenomena. Develop and fabricate external damping treatment. Obtain full scale data from a naval vessel to support investigation of alternating current electromagnetic (AC EM) signatures.

FY08 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Conduct material characterization of inner decoupler material and complete level one qualification. Conduct scaled test of external damping treatment. Complete analysis of AC EM signature data.

FY09 Planned Accomplishments include the following: Continue Large Scale Vehicle operations and maintain LSV and ISMS test ranges. Complete level two qualification of inner decoupler material and conduct full scale patch test. Develop user interface and conduct performance testing of tactical decision aid.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY08	FY09
Total Ownership/Affordability/Subtotal Cost	2.447	2.361	4.885	7.330
RDT&E Articles Quantity				

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

FY06 Accomplishments: Completed Business Case Analysis (BCA) on implementing electric vice hydraulic actuation technology for the Weapons Stowage and Handling System (WSHS). Performed on-shore qualification testing/validation on one Electric Actuation System (EAS) Advanced Development Model (ADM). Initiated BCA to eliminate 32 rotary EAS associated with the ship service hydraulic plant. Designed and fabricated external damping treatments for the free-flood area. Performed free-flood acoustic test on damping material. Developed a plan to investigate main ballast tank acoustic tile requirements for SSN-688 class submarines as a life cycle cost reduction initiative. Modified acoustic tile configuration on candidate 688 submarine to obtain full-scale data.

FY07 Planned Accomplishments: Complete BCA to replace 35 rotary 2 and 3 position hydraulic actuators with EAS's. Develop a BCA to replace the current Universal Modular Mast (UMM) hydraulic actuation system with an EAS. Study the remaining hydraulic actuators in the sail and in the external hydraulics supply system for potential replacement with EAS. Complete development of the UMM EAS performance specification and develop EAS performance specification for control surfaces. Develop a standard rotary EAS test plan and initiate qualification testing on additional 10,000 and/or 20,000 3-position rotary EAS ADMs. Conduct panel and scaled cylindrical shell testing on damping material. Modify acoustic tile configuration on candidate SSN-668i submarine. Obtain acoustic data during planned acoustic trial on candidate SSN-688 and SSN-688i submarines. Initiate development of a Common Electric Hull Penetrator (CEHP) for communications Imaging and Electronic Warfare (I&EW) sensors in the submarine sail. Develop new EAS technology and composite materials for the existing Universal Modular Mast (UMM). Complete performance specification for the UMM EAS. Complete SBIR development of two prototype composite UMM guide trunks and integrate the composite guide trunk into the UMM System design.

FY08 Planned Accomplishments: Initiate qualification testing on 2-position rotary EAS ADM's. Complete qualification testing on 10,000 and/or 20,000 in-lb 3-position rotary EAS's. Complete BCA to eliminate hydraulics in the sail by replacing hydraulic actuators with EAS's. Develop EAS performance specification for induction valve, head valve, and the radar in the sail. Develop BCA to replace stern plane and rudder control surface hydraulic actuators with EAS. Conduct pop up and Intermediate Scale Measurement System tests to assess damping configuration. Develop a business case for installing CEHP's on new construction VIRGINIA Class hulls. Fabricate CEHP prototype and perform shore-based testing and evaluation. Perform shore-based UMM system level tests and evaluate performance of UMM EAS and guide trunk composite material.

FY09 Planned Accomplishments: Complete qualification testing on 5,000 and/or 20,000 in-lb 2-position rotary EAS ADM's. Conduct at-sea demonstration of a 10,000 and/or 20,000 in-lb, 3-position rotary EAS ADM on SSN 688 Class hull. Develop EAS performance specification for remaining external hydraulics system applications. Complete BCA to replace stern plane and rudder control surface hydraulic actuators with EAS. Procure EAS ADM for induction valve, head valve, and the radar. Procure EAS ADM for fairwater plane control surfaces. Conduct pop up and Intermediate Scale Measurement System tests to assess damping configuration. Transition a new CEHP to VIRGINIA Class for implementation during new construction. Conduct at-sea demonstration of the UMM EAS in the mission reconfigurable bay on VIRGINIA. Evaluate performance of the composite UMM guide trunk during Fleet operations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY08	FY09
Advanced Propulsion/Ship Concept Development/Subtotal Costs	37.252	55.327	42.115	49.235
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 three technical areas: Shaftless Propulsion, External Weapon Stow and Launch, and Radical Ship HM&E Infrastructure Reduction. Develop submarine alternative propulsion and stern configurations with potential to significantly reduce submarine acquisition cost. Demonstrate 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. 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.

FY06 Accomplishments include the following: Provided conceptual design, analysis and component-level or small-scale demonstrations of TANGO BRAVO technologies. Provided Go/No Go Assessment and Phase 2 contract award for TANGO BRAVO Shaftless Propulsion technology area. Conducted independent studies to inform Navy on the costs, benefits, and risks associated with sustaining nuclear submarine design capabilities. Identified submarine construction drivers and improved submarine cost models. Developed an improved definition of technologies and approaches for cost reduction in current and future nuclear submarines.

FY07 Planned Accomplishments: Complete small scale TANGO BRAVO demonstrations and concept development. Provide Go/No Go Assessment and Phase 2 contract awards for TANGO BRAVO External Weapons Stow and Launch and Radical Ship Infrastructure Reduction technology areas. Demonstrate Shaftless Propulsion at component level. Continue development of innovative technologies to support the undersea superiority initiative.

FY08 Planned Accomplishments: Complete component level TANGO BRAVO technology demonstrations. Assess Go/No Go for TANGO BRAVO Phase 3 awards. Continue development of innovative technologies to support the undersea superiority initiative.

FY09 Planned Accomplishments: Complete TANGO BRAVO Prototype level demonstrations. Continue development of innovative technologies to support the undersea superiority initiative. Commence Submarine Shaftless Stern Demonstrator (S3D) program. Initial efforts will include concept studies, demonstration platform downselect and specification development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Development	2033/Advanced Submarine Systems Development

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not applicable.										

D. ACQUISITION STRATEGY:

Sole source conform studies contracts with Electric Boat (EB) and Northrup Grumman Newport News (NGNN).

E. MAJOR PERFORMERS:

Northrop Grumman Newport News, Newport News, VA	10/05	04/07	11/07	11/08
Electric Boat Corp., Groton, CT	10/05	11/06	11/07	11/08
Naval Surf Warfare Ctr, Carderock, MD	10/05	10/06	10/07	10/08
Naval Undersea Warfare Ctr, Newport, R.I	10/05	10/06	10/07	10/08
Raytheon, Portsmouth, RI	12/05	11/06	12/07	12/08

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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	FY06 Cost	FY 06 Award Date	FY07 Cost	FY 07 Award Date	FY08 Cost	FY 08 Award Date	FY09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Targ Value of Contract
Product Development	S/CPFF	EB Groton, CT	2.940										2.940	
Product Development	S/CPFF	NNS Newport News, VA	25.222	0.223	Various								25.445	
Product Development	S/CPFF	NNS Newport News, VA		0.540	Various	0.050	04/07	1.042	12/07	0.324	12/08		1.956	
Product Development	S/CPFF	EB Groton, CT	81.378	20.594	Various								101.972	
Product Development	S/CPFF	EB Groton, CT				0.837	Various	16.603	12/07	28.562	12/08		46.002	
Product Development	S/CPFF	Raytheon		4.518	Various	4.500	11/06	1.712	12/07	6.760	12/08		17.490	
Product Development	WR	NSWC Bethesda, MD	266.776	20.506	Various	20.184	Various	19.398	10/07	24.177	10/08		351.041	
Product Development	S/CPFF	ARL/PSU, State College,PA	36.833	0.671	Various	0.517	Various	0.275	12/07	0.245	12/08		38.541	
Product Development	S/CPFF	UT/ARL,		2.000	05/06	3.000	03/07						5.000	
Product Development	S/CPFF	Noesis	5.682										5.682	
Product Development	Various	Various	181.873	1.400	Various	14.154	Various	11.962	Various	18.944	Various		228.333	
Product Development	WX	NUWC Newport, RI	3.071	3.010	Various	1.837	Various	1.112	10/07	1.042	10/08		10.072	
Product Development	RX	NUWC Newport, RI	9.350	9.397	Various	14.297	Various	12.000	12/07	1.000	12/08		46.044	
Product Development	RX	ONR, Arlington, VA		0.372	Various	3.561	Various	1.000	Various	0.805	Various		5.738	
	BTR	Funds Being Reprogrammed				9.999	Various						9.999	
Subtotal Product Development			613.125	63.231		72.936		65.104		81.859		0.000	896.255	

Remarks:

Development Support Equipment													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	
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 2007**

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

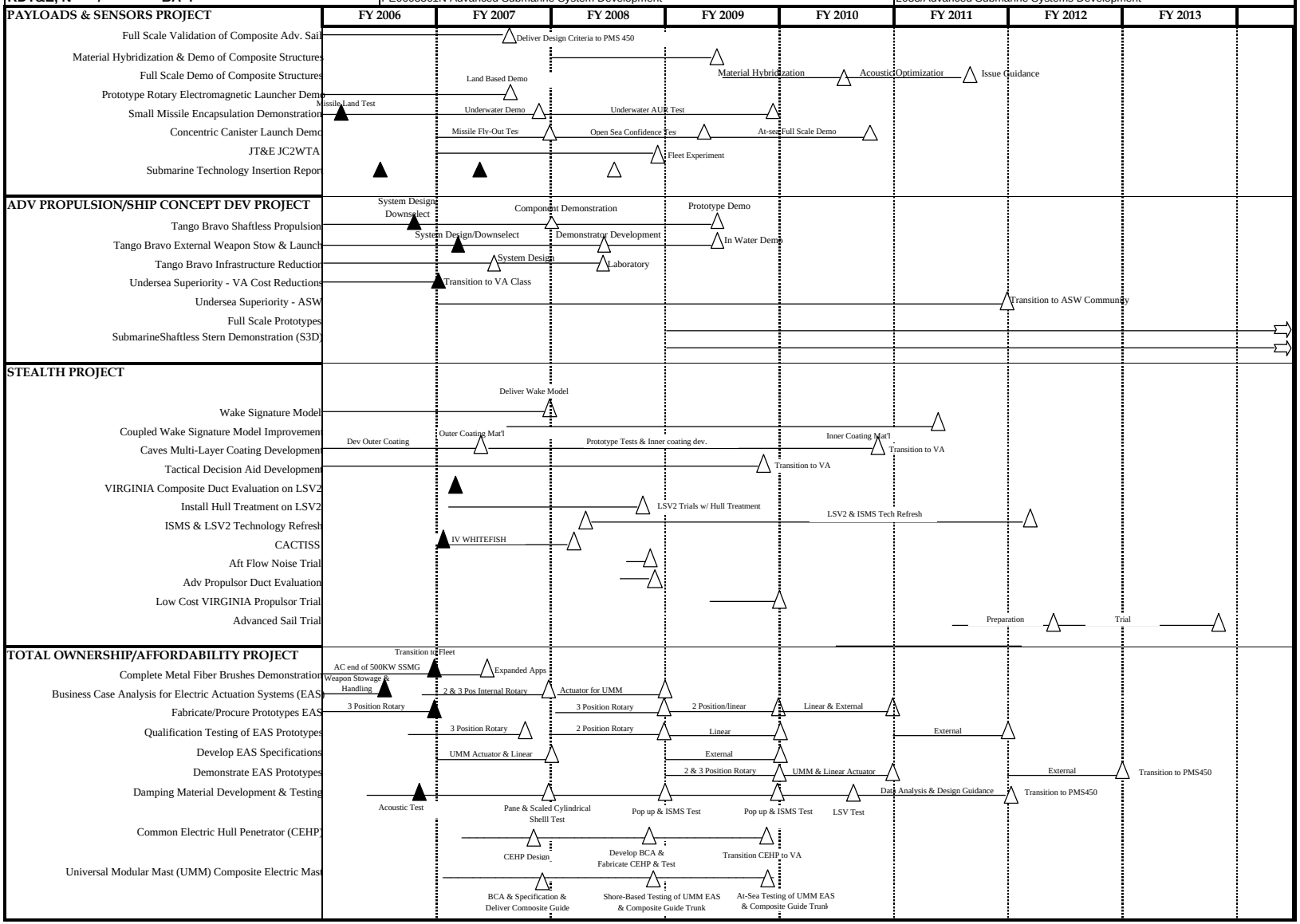
PROGRAM ELEMENT: PE0603561N Advanced Submarine System Development

PROJECT NAME AND NUMBER: 2033/Advanced Submarine Systems Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY06 Cost	FY06 Award Date	FY07 Cost	FY07 Award Date	FY08 Cost	FY08 Award Date	FY09 Cost	FY09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evalua	S/CPFF	EB	0.000	0.413	Various	0.100	02/07			1.000	12/08		1.513	
Developmental Test & Evalua	S/CPFF	Raytheon	0.931	4.000	Various	3.882	Various	4.138	12/07	5.500	12/08		18.451	
Developmental Test & Evalua	WX	NAVAIR	0.000	0.868	Various	0.260	05/07	0.942	10/07				2.070	
Developmental Test & Evalua	Various	Various	25.290	3.303	Various	3.860	Various	6.297	10/07	1.250	10/08		40.000	
Developmental Test & Evalua	WX	NUWC Newport	0.650	0.116	Various	0.310	10/06						1.076	
Developmental Test & Evalua	WX	NSWC Carderock	0.000	1.604	Various	0.810	10/06	2.694	10/07	5.792	10/08		10.900	
Subtotal T&E			26.871	10.304		9.222		14.071		13.542			74.010	
Remarks:														
Contractor Engineering Support	CPFF	Various	6.492	2.654	Various	1.469	11/06	1.314	10/07	1.289	10/08		13.218	
Government Engineering Suppor	WR	Various	4.273	1.026	Various	1.345	10/06	1.110	10/07	1.125	10/08		8.879	
Travel			0.332	0.060	10/05	0.060	10/06	0.060	10/07	0.060	10/08		0.572	
Subtotal Management			11.097	3.740		2.874		2.484		2.474			22.669	
Remarks:														
Total Cost			651.093	77.275		85.032		81.659		97.875			992.934	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine System Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Payloads & Sensors								
Fabricate and demo full scale composite Adv. Sail prototype	1Q - 4Q							
Complete Comp. Adv. Sail development, transition to VA class		1Q-3Q						
Comp.Adv. Structures complete design criteria/req. doc./testing			1Q - 4Q	1Q - 2Q				
Full Scale Demo of Composite Structures				3Q - 4Q	1Q - 4Q	1Q - 2Q		
Rotary Electromagnetic Launcher Land Based Demo		2Q - 3Q						
Small Missile Encapsulation Land Based Test	1Q							
Small Missile Encapsulation Underwater Demo		4Q						
Small Missile Encapsulation All-Up Round Test				4Q				
Concentric Canister Launch Fly Out Test		3Q - 4Q						
Concentric Canister Launch Open Sea Confidence Test				2Q				
Concentric Canister Launch At-Sea Demo					3Q			
JT&E JC2WTA - Fleet Experiment			3Q - 4Q					
Advanced Propulsion/Ship Concept Development								
Tango Bravo Shaftless Propulsion	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q-2Q				
Tango Bravo External Weapon Stow & Launch	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q-2Q				
Tango Bravo Infrastructure Reduction	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q-2Q				
Undersea Superiority - VA Cost Reduction	1Q - 4Q							
Undersea Superiority - ASW		1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		
Submarine Shaftless Stern Demonstration (S3D)				1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine System Development				PROJECT NUMBER AND NAME 2033/Advanced Submarine Systems Development			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Stealth								
VA Wake Signature Study	1Q - 4Q	1Q - 3Q						
Deliver VA Wake Signature Model		4Q						
Coupled Wake Signature Model Development		3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q		
CAVES Multi-Layer Coating Development	1Q - 4Q	1Q						
New Coating Material		2Q			3Q			
Prototype Tests for Outer Material and Dev Inner Material		3Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q			
Tactical Decision Aid Interface Development & Testing	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q				
EM Silencing Evaluate & Integrate Advanced Sys on VA Class	1Q - 4Q	1Q - 4Q	1Q - 4Q	1Q - 3Q				
Composite Duct Eval, LSV2 (VIRGINIA Cost Savings)		1Q						
LSV2 RAV install hull treatment on pressure hull and sail		2Q - 4Q	1Q - 3Q					
Complete VA advanced sail trials, LSV2							2Q - 4Q	1Q - 3Q
VIRGINIA Aft Flow Noise trial, LSV2			3Q - 4Q					
Advanced Propulsor Duct Eval, LSV2			4Q					
Low Cost VIRGINIA Propulsor, LSV2				3Q - 4Q				
LSV2 Technology refresh			2Q		2Q	4Q	1Q	
LSV2 Advanced Propuslor Duct Evaluation			4Q					
LSV2 Low Cost VIRGINIA Propulsor				3Q - 4Q				
Technology refresh of Intermediate Scale Meas. System	4Q					1Q - 3Q		
Total Ownership/Affordability								
Comp. Adv. Metal Brushes transition to PMS 392	3Q - 4Q	3Q						
Complete three Business Case Analyses for implenting EAS's	2Q - 4Q	1Q - 4Q	1Q - 4Q					
Develop four new EAS performance specifications		1Q - 4Q	1Q - 4Q	1Q - 4Q				1Q - 4Q
Initiate/complete shore-based testing/validation on nine ADM's	4Q	1Q - 4Q	1Q - 4Q	1Q - 4Q		1Q - 4Q		
Conduct six at-sea full scale EAS demonstrations				1Q - 4Q	1Q - 4Q		1Q - 4Q	1Q - 4Q
Damping Material Acoustic Test								
Damping Material Panel & Scaled Cylindrical Shell Tests	3Q - 4Q		4Q					
Pop Up & ISMS Tests on Damping Material			4Q					
Pop Up & ISMS Tests on Damping Material				4Q				
Large Scale Test of Damping Material					4Q			
Develop/Demo Universal Hull Penetrators and Cabling				1Q - 4Q	1Q - 4Q			
Develop and Test Common Hull Penetrator (CEHP)		1Q - 4Q	1Q - 4Q	1Q - 4Q				
Develop and Test UMM Composite Electric Mast		1Q - 4Q	1Q - 4Q	1Q - 4Q				

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0223/Adv. Submarine Combat Sys. Improv.	**59.972**	**54.758**	**53.223**	**45.175**	**50.076**	**53.417**	**52.856**	**53.834**
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 tactical 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/combat control systems. Advanced Sonar Arrays develop tests and new sensors and demonstrates large array configuration. Program is funded under demonstration and validation, as it develops and integrates hardware for experimental test related to specific platform applications.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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)

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Sonar System Processing/Subtotal Cost	31.702	32.350	25.859	25.835
RDT&E Articles Quantity				

Advanced Processing Build-Acoustic (APB-A) transitioned to PMS401 for fleet introduction in FY05. FY06 APB(A) has continued improvements in sonar detection and classification via improved algorithms and automation for towed arrays, and initiated improvements to medium and high frequency active systems. These enhancements will continue to be refined over the near term in concert with a special focus on improved sonar planning and environmental monitoring, initial work on twin line and/or high gain towed array signal processing and systems engineering, as well as processing enhancements for Sphere Arrays. Efforts for FY07 and FY08 will focus on the initial steps required to automate combat systems operations, in support of reduced workload and manning, while continuing efforts on improving the acoustic contribution to ASW in the littorals. Primary improvements are planned for sphere array signal processing, contact followers, trackers, refined automation, ranging tools, search space reduction tools, environmental prediction, and monitoring and active systems. Recently implemented Signal processing for the TB-29 Towed Array will be refined to ensure improved performance in shallow water and through maneuvers. FY09 will begin work with Low Frequency Active (LFA) systems and improvements for TB-23 and TB-16 towed arrays.

	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Tactical Control/Subtotal Cost	10.000	8.000	13.864	13.000
RDT&E Articles Quantity				

Advanced Processing Build-Tactical (APB-T) transitioned to PMS425 for fleet introduction in FY04. FY06 APB(T) focused on display sharing across acoustic and tactical systems, improving automated state estimation and the introduction of Command Information Management tools and displays. FY07 and FY08 efforts will focus on enhancing functionality through integrated imaging capabilities, continued improvements in Command Information Management and automated state estimation, and the initial steps required to automate combat systems operations, in support of work load and manning reductions. Work will continue on improving the tactical commander's ability to manage close in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, uncertainty management, and close encounter decision management. FY09 efforts will focus on all source data fusion algorithms and route planning, acoustic and non-acoustic vulnerability management, and other forms of automation.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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)	

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Sensors/Subtotal Cost	18.270	14.408	13.500	6.340
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. Current projects include: Low Cost Conformal Array (LCCA), a modular High Frequency (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 combined with two other LVAs to form a Large Wide Aperture Array (LgWAA) for VIRGINIA forward-fit; Fiber-Optic CAVES (FOCAVES) sensors and processing; Advanced Towed Array Technology (ATAT - provides Twin Line Towed Array Capability (TLTAC)); and ACOMMs, a digital acoustic communications system for submarines and surface ships. In FY06 install and test the LCCA Advanced Development Model (ADM); begin development of the LCCA Engineering Development Model (EDM) and begin ATAT concept studies; begin development of a FOCAVES test patch and Time Domain Multiplexed (TDM) telemetry; begin development of low heat, small footprint, high processing power inboard electronics (RCINextGen - Rapid COTS Insertion Next Generation); and develop improved MF ACOMMS performance. In FY07, continue development of ATAT; coordinate with PMS 401 on development of the LCCA EDM; begin fabrication of the LVA ADM; build and test an LVA mockup; test a FOCAVES array component; continue development of RCINextGen; and begin MF ACOMMS surface ship development. In FY08, continue development of ATAT; install LVA ADM; complete surface ship MF ACOMMS development; continue coordination with PMS401 developing the LCCA EDM; complete development of RCI NextGen; and build ADM electronics for the LCCA ADM ship. In FY09, test LVA; test RCI NextGen; begin transition of CAVES to PMS450; complete ACOMMS encryption and Information Assurance (IA) development; continue development of twin line array prototype.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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)	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not applicable.										

D. ACQUISITION STRATEGY: *

Plan to use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

E. MAJOR PERFORMERS: **

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).

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	89.811	15.526	10/05	14.473	10/06	13.213	10/07	13.024	10/08	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	1.000										1.000	
Product Development	WR	NRL/Washington	5.039	0.356	10/05	0.356	10/06	0.600	10/07	0.050	10/08	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.490										0.490	
Product Development	WR	NSWC Carderock, MD	12.176	2.705	10/05	2.000	10/06	1.000	10/07	1.000	10/08	CONT.	CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036			2.000	10/06	1.500	10/07	1.000	10/08	CONT.	CONT.	
Product Development	WR	NSWC Dahlgren	0.258	0.080	10/05	0.080	10/06	0.050	10/07	0.050	10/08	CONT.	CONT.	
Product Development	PD	ONI, Washington	4.692	1.007	12/05	0.900	12/06	0.950	12/07	0.800	12/08	CONT.	CONT.	
Product Development	C/CPFF	Lockheed Martin, VA	20.880	3.466	12/05	3.818	12/06	3.900	12/07	3.000	12/08	CONT.	CONT.	
Product Development	C/CPFF	BAE, NH	3.402										3.402	
Product Development	RCP	NSMA	1.035	0.180	11/05	0.180	11/06	0.180	11/07	0.180	11/08	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	8.925	1.800	12/05	1.800	12/06	1.800	12/07	1.800	12/08	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Lab	8.064	1.744	12/05	1.744	12/06	1.744	12/07	1.744	12/08	CONT.	CONT.	
Product Development	RCP	ONR/MCCI	2.800										2.800	
Product Development	MIPR	METRON	3.673	1.508	12/05	1.508	12/06	1.508	12/07	1.000	12/08	CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	2.527	0.237	12/05	0.237	12/06	0.250	12/07	0.250	12/08	CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	2.836										2.836	
Product Development	RCP	ONR/GTRI	2.050	0.250	12/05	0.500	12/06	0.500	12/07	0.500	12/08	CONT.	CONT.	
Product Development	SS/CPFF	APL/JHU, MD	43.290	10.339	12/05	10.139	12/06	7.882	12/07	9.000	12/08	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.275	0.050	12/05	0.050	12/06	0.050	12/07	0.050	12/08	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	29.588	4.601	12/05	4.001	12/06	4.500	12/07	3.500	12/08	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	2.082	0.350	12/05	0.350	12/06	0.350	12/07	0.172	12/08	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	1.050	0.150	01/06	0.150	01/06	0.150	01/07	0.150	01/08	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.170	0.030	10/05	0.030	10/06	0.030	10/07	0.030	10/08	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.713	0.140	10/05	0.140	10/06	0.100	10/07	0.100	10/08	CONT.	CONT.	
Product Development	PD	SPWAR, CA	1.436	0.400	10/05	0.400	10/06		10/07		10/08	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	20.353	8.151	10/05	4.128	10/06	2.500	10/07	3.000	10/08	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.573	0.100	10/05	0.100	10/06	0.100	10/07	0.100	10/08	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603										5.603	
Product Development	CPFF	Lockheed Martin	4.139	1.590	12/05	2.420	10/06	1.000	10/07	1.000	10/08	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	0.650	12/07	0.650	12/08	CONT.	CONT.	
SBIRs / BAAs	C/CPFF	Various	10.684	1.787	Various	0.579	Various	5.691	Various	0.000	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315										1.315	
Subtotal Product Development			316.310	56.947		52.683		50.198		42.150		CONT.	CONT.	

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	Award Date Date	FY 09 Cost	FY09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	S/CPFF	NOESIS	6.000										6.000	
Development Test & Evaluation	S/CPFF	EB Groton, CT	0.600										0.600	
Development Test & Evaluation	S/CPFF	NNS Norfolk, VA	0.700										0.700	
Development Test & Evaluation	S/CPFF	NSWC Bethesda, MD	0.700										0.700	
Subtotal Support			8.000			0.000		0.000		0.000		0.000	8.000	

Remarks:

Exhibit R-3 Cost Analysis (page 3)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	2.693										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		0.000		0.000		0.000	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	6.388	1.000	12/05	1.000	12/06	1.000	12/07	1.000	12/08	CONT.	CONT.	
Program Management Support	C/CPFF	Various	2.240	1.000	12/05	1.000	12/06	1.000	12/07	1.000	12/08	CONT.	CONT.	
Program Management Support	C/CPFF	EG&G	1.787	0.950	12/05			0.950	12/07	0.950			1.787	
Program Management Support	C/CPFF	Anteon Corporation	0.198										0.198	
Travel			0.425	0.075		0.075		0.075		0.075		CONT.	CONT.	
Transportation														
SBIR Assessment														
Subtotal Management			11.488	3.025		2.075		3.025		3.025		CONT.	CONT.	

Remarks:

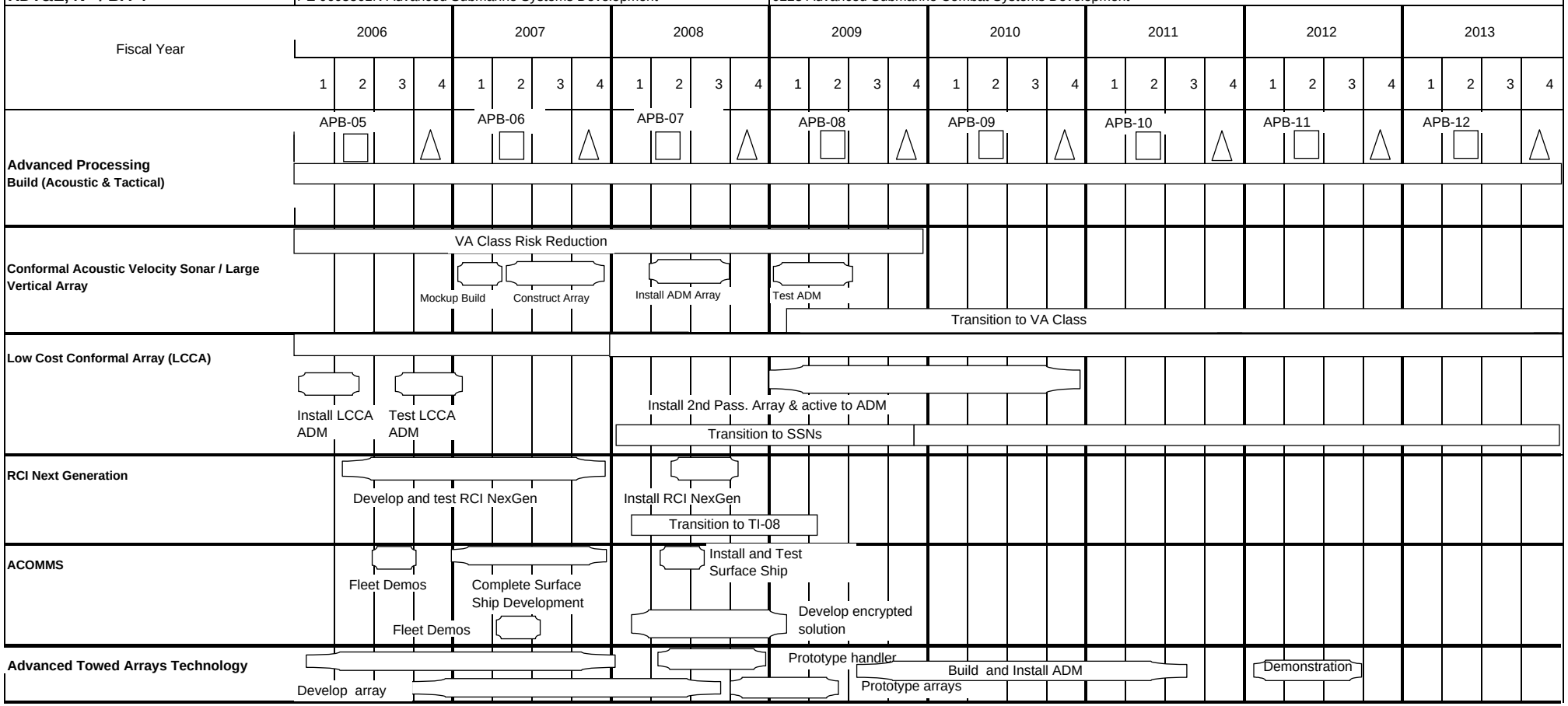
Total Cost			342.702	59.972		54.758		53.223		45.175		CONT.	CONT.	

Remarks:

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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



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

LEGEND: Transition Sea Test

Exhibit R-4a, Schedule Detail							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**		PROGRAM ELEMENT PE 0603561N Advanced Submarine Systems Developmen				PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development		
Schedule Profile		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Advanced Processing Builds (Acoustic/Tactical)									
	Transition APB-05 to ARCI	2Q							
	APB-06 Sea Test	4Q							
	Transition APB-06 to ARCI/BYG-1		2Q						
	APB-07 Sea Test		4Q						
	Transition APB-07 to ARCI/BYG-1			2Q					
	APB-08 Sea Test			4Q					
	Transition APB-08 to ARCI/BYG-1				2Q				
	APB-09 Sea Test				4Q				
	Transition APB-09 to ARCI/BYG-1					2Q			
	APB-10 Sea Test					4Q			
	Transition APB-10 to ARCI/BYG-1						2Q		
	APB-11 Sea Test						4Q		
	Transition APB-11 to ARCI/BYG-1							2Q	
	APB-12 Sea Test							4Q	
	Transition APB-12 to ARCI/BYG-1								2Q
	APB-13 Sea Test								4Q

Exhibit R-4a, Schedule Detail								DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**		PROGRAM ELEMENT PE 0603561N Advanced Sub		PROJECT NUMBER AND NAME 0223 Advanced Submarine Combat Systems Development				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
TB-16 Multi-Line Towed Array (MLTA)								
24-channel acoustic module LPO self noise & shakedown test								
96-channel acoustic module and receiver integration								
96-channel system test								
96-channel system LPO tow test								
Conformal Acoustic Velocity Sonar/Large Vertical Array								
Begin detail design, advanced procurement		1Q-2Q						
Construct ADM array		2Q - 4Q						
Install ADM array			2Q - 3Q					
Test ADM				1Q-2Q				
Transition to VIRGINIA Class				1Q-4Q	1Q-4Q			
Low Cost Conformal Array (LCCA)								
Install ADM array	1Q - 2Q							
Test ADM array	3Q - 4Q	1Q						
Install 2nd Passive Array and add active staves to ADM and			1Q-4Q	1Q-4Q				
Transition to SSNs					1Q-4Q			
Production (Note: continues to FY16)					1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
RCI Next Generation								
Develop and test RCI Next Gen	2Q - 4Q	1Q - 4Q						
Install RCI Next Gen			2Q - 4Q					
Transition to TI08			1Q - 4Q	1Q - 2Q				
ACOMMS								
Fleet Demos	3Q	2Q						
Complete Surface Shi Development		1Q - 4Q						
Install and Test Surface Ship ACOMMS			2Q - 3Q					
Develop Encrypted Solution			1Q - 4Q	1Q				
Advanced Towed Array Technology								
Develop handler	1Q - 4Q	1Q - 4Q						
Develop Array	4Q	1Q - 4Q	1Q - 3Q					
Prototype handler			2Q - 4Q					
Prototype arrays			4Q	1Q-3Q				
Build and install ADM				3Q-4Q	1Q-4Q	1Q-3Q		
Demonstration							1Q-3Q	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9812N/9812C	2.509	4.483		
Experimental Research Transformational Submersible				

The Congressional add will provide for the initial studies, conceptual designs, and concept of operations for 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. In FY07, the Navy will evaluate the feasibility of performing various R&D missions with a commercially owned, commercially operated submersible, and develop a business case analysis for such use.

	FY 06	FY 07		
9813N/9813C	2.908	1.992		
Inner & Outer Decoupler Materials for Hull Array				

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 Conforma 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	FY 07		
9815N	2.412	0.000		
Submarine Tactical Monitor (SubTaM)				

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	9999 Congressional Plus-Ups : VARIOUS	

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
0223C	0.000	2.491		
Fiber Optic Conformal Acoustic Velocity System				

The Congressional add will be used to continue development of fiber optic functionality for the CAVES Large Vertical Array (LVA) Advanced Development Model (ADM) which is a precursor to the VIRGINIA program Large Wide Aperture Array (LgWAA) replacement array.

	FY 06	FY 07		
0223N	3.462	0.000		
(FO-CAVES) Fiber Optic Conformal Acoustic Velocity System				

The Congressional add will be used to continue development of fiber optic functionality for the CAVES Large Vertical Array (LVA) Advanced Development Model (ADM) which is a precursor to the VIRGINIA program Large Wide Aperture Array (LgWAA) replacement array.

	FY 06	FY 07		
9886N	9.577	0.000		
SSGN Unmanned Undersea Vehicle Integration				

Funding will be used to define preliminary design interfaces and documentation to facilitate rapid and affordable insertion into SSGN UUVs and other undersea payloads. In order to provide end-to-end capability these interfaces will address autonomous launch and recovery, stowage and support, and control systems. The interfaces will be developed for USS OHIO Class SSGNs while maximizing compatibility for other submarine classes.

	FY 06	FY 07		
9986N	0.000	1.295		
Cryogenic Power System for Unmanned Underwater Vehicle (UUV)				

This Congressional-add funding is for the Cryogenic Power System for Unmanned Underwater Vehicle (UUV).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine System Developmen	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9987N	0.000	4.483		
Large Displacement UUV At Sea Launch & Recovery				

Funding will be used to define, document and provide interfaces, modular support equipment, and launch & recovery documentation for rapid affordable integration of Large Displacement UUVs and undersea payloads into SSGN Large Tubes. Land based facilities and in-water tests will be executed to demonstrate modular integration techniques and procedures. Payload interfaces and modular integration approach will maximize compatibility for potential use on other submarine classes.

	FY 06	FY 07		
9988N	0.000	0.996		
Low Cost Thin Line Fiber Optic Towed Array				

Develop a much lower cost, very low noise, vibration resistant laser required for shipboard fiberoptic sensor applications such as TB-33, VIRGINIA Lightweight WAA, and FiberOptic CAVES. Current lasers are either expensive, or noisy.

	FY 06	FY 07		
9989N	0.000	1.345		
Submarine Automated Simulation				

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

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603562N/Submarine Tactical Warfare Systems			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**7.013**	**10.318**	**9.865**	**10.215**	**10.416**	**10.653**	**10.854**	**11.063**
0770/Advanced Sub. Spt Equipment Program	**3.864**	**4.756**	**4.242**	**4.372**	**4.486**	**4.593**	**4.679**	**4.767**
9040/Multi-Line Towed Array								
1739/Sub. Artic Warfare Development	**3.149**	**5.562**	**5.623**	**5.843**	**5.930**	**6.060**	**6.175**	**6.296**
Quality of RDT&E Articles								

Defense Emergency Response Funds (DERF) Funds: NOT APPLICABLE

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.

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	0603562N/Submarine Tactical Warfare Systems	

B. PROGRAM CHANGE SUMMARY:

Funding: BLI 0770/1739	FY 2006	FY 2007	FY 2008	FY 2009
FY 07 Pres Budget Controls	7.017	10.357	9.909	10.219
FY 08 Pres Budget Controls	7.013	10.318	9.865	10.215
Total Adjustments	-0.004	-0.039	-0.044	-0.004
Summary of Adjustments				
Program Increases			0.001	0.004
Undistributed General Reductions	-0.004	-0.039	-0.045	-0.008
Subtotal	-0.004	-0.039	-0.044	-0.004
Total Changes				

Schedule:

Not Applicable

Technical:

Not Applicable

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
0770 Advanced Sub Suppt Equip Prog	**3.864**	**4.756**	**4.242**	**4.372**	**4.486**	**4.593**	**4.679**	**4.767**
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), Laser Detection and Low Probability of Intercept (LPI) Receiver.

Situational Awareness sub-projects include: Patriot Automated Rangefinder (Phase B), Imaging Technologies (virtual periscope), Automatic Identification System (AIS), Low Cost Expendable 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 Surveillance Radar (PSR) at-sea testing, Sensor Enhancements (fusion).

All programs funded in this project are non-acquisition category programs. Program plans and priorities are established by N87. The test articles identified consist of critical components that will be fully developed during engineering development into Engineering Development Models (EDM's).

ASSEP Programs will eventually be broken down into initial and research, for both Imaging and Electronic Warfare. An inclusive category will also be included for initiatives which will describe categories like "submarine sensors" which do not readily categorize into Imaging or Electronic Warfare.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N /BA-4	0603562N/Submarine Tactical Warfare Systems	0770/Advanced Submarine Support Equipment Program (ASSEP)	

B. Accomplishments/Planned Program

Threat Warning / Self Protection

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.026	0.162	0.404	0.451
RDT&E Articles Quantity				

FY 06-09
Mast Signature Reduction
Laser Detection
Low Probability Intercept, Receiver Improvements.

Situational Awareness Enhancements

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.531	4.594	3.794	2.396
RDT&E Articles Quantity				

FY 06-09
Patriot Program and Patriot Upgrades ; Virtual periscope; LCES; Optical Sensor networks, specific Emitter identification (SEI) Improvements; Imaging Processing Algorithms;
Advanced Camera Technology

Intelligence, Surveillance anc Reconnaissance Enhancements

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.307	0.000	0.044	1.525
RDT&E Articles Quantity				

FY 06, FY 08-09
Passive Surveillance Radar (PSR) - Develop EDM and conduct At-Sea testing and analysis.
Advanced EW Tuners
Offboard Sensors (UUV/UAV Payloads) - Conduct feasibility studies, develop concepts and determine performance specifications.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603562N/Submarine Tactical Warfare Systems	0770/Advanced Submarine Support Equipment Program (ASSEP)	

C. OTHER PROGRAM FUNDING SUMMARY: N/A

Line Item No. & Name

(U) Other Program Funding Summary: Not applicable.
(U) Related RDT&E: Not applicable.

D. ACQUISITION STRATEGY: *

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.

E. MAJOR PERFORMERS: **

NAWC, China Lake, CA
NUWC, Newport, RI
NASA JPL, Pasadena, CA
JHU, Columbia, MD
Applied EM
ARETE

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	ARETE/AEM/EDO/JHU/JPL/NRL	1.135	1.395	05/06	1.924	10/06	2.162	10/07	3.315	10/08	CONT	CONT	N/A
Ancillary Hardware Development													0.000	
Component Development													0.000	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering	WR	NUWC Newport, RI	0.610	0.679	10/05	0.720	10/06	0.875	10/07	0.375	10/08	CONT	CONT	N/A
	WR/RC	NAWC China Lake	1.555	1.550	10/05	1.736	10/06	0.802	10/07	0.250	10/08	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			3.300	3.624		4.380		3.839		3.940		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	CPAF	AT&T GSI, Vienna,VA		0.210	11/05	0.220	01/07	0.225	11/07	0.230	11/08	CONT	CONT	N//A
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.210		0.220		0.225		0.230		CONT	CONT	

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	
Management Support Services	C/CPFF	Various										CONT	CONT	N/A
Travel	TOs	Various		0.030		0.031		0.032		0.033		0.000	0.093	
Labor (Research Personnel)													0.000	
SBIR Assessment				0.000		0.125		0.146		0.169		CONT	CONT	
Subtotal Management			0.000	0.030		0.156		0.178		0.202		0.000	CONT	

Remarks:

Total Cost			3.300	3.864		4.756		4.242		4.372		CONT	CONT	

Remarks:

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

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)

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
ASSEP																																
Threat Warning																																
LPI Receiver Improvements					Concept					Perf Spec							EDM			Testing												
RCS/EO/IR Sig Reduction		Material Sel				Material Test					Coating Sel					Coating Test					EDM					Coating Test					EDM	
Laser Detection										Concept				Performance Spec						EDM				Testing								
Situational Awareness Enhancements																																
PATRIOT Program					Phase B Bread Board				Phase B EDM				Testing					Phase B Impvmnt Concept							Phase B Impvmnt Bread Board					EDM		
Virtual Periscope																	Payload Concept									Impvmnt Concept				EDM		
Low Cost Exp Sensor (LCES)			EDM						Testing												Perf Spec				EDM			Payload Impvmnt				
Optical Sensor Networks															Concept							Perf Spec				EDM						
Specific Emitter ID (SEI)															Concept							Perf Spec				EDM						
Imaging Processing Algorithms																			Concept					Perf Spec				EDM				
Advanced Camera Technology					AEM				EDM					Testing																		
Intelligence, Surveillance and Reconnaissance (ISR) Enhancements																																
Passive Surveillance Radar (PSR)			Testing																					PSR Phase 2 Concept				EDM		Testing		
Off Board Sensors	Concept Eval																															
Sensor Enhancements																Concept					Perf Spec				EDM				Testing			
Advanced EW Tuners													Concept					Perf Spec						EDM			Testing					

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems				PROJECT NUMBER AND NAME 0770/Advanced Submarine Support Equip Prog (ASSEP)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Threat Warning / Self Protection								
Mast Signature Reduction - RCS and EO/IR Coating Selection			Q2		Q4 (EDM)			Q4 (EDM)
MSR EO/IR Material Testing		Q1		Q3			Q1	
LPI Ultra Wide Chirp Concept Design		Q1						
LPI Ultra Wide Chirp Develop Specification			Q2					
LPI Ultra Wide Chirp EDM				Q4				
LPI Ultra Wide Chirp Test EDM					Q3			
Laser Detection Concept Study			Q1					
Laser Detection Develop Specification				Q1				
Laser Detection EDM					Q3			
Laser Detection Testing						Q3		
Situational Awareness Enhancements								
Patriot Upgrades					Q1	Q3		
Patriot Upgrades testing and improvement						Q4	Q1	
Patriot Phase B EDM		Q4						Q4
Patriot Antenna Prototype Testing	Q4			Q3				
Advanced Camera Technology (360 degree imaging) AEM	Q2	Q1						
Advanced Camera Technology (360 degree imaging) EDM			Q1					
Advanced Camera Technology (360 degree Imaging) DT/OT				Q4				
Virtual Periscope Improvement Concept							Q1	
Virtual Periscope EDM								Q4
Alternate CADF Antenna Technology AEM		Q1						
Alternate CADF Antenna Technology EDM			Q1					
Alternate CADF Antenna Technology DT/OT								
Alternate CADF Antenna Technology At-Sea Testing				Q4				
Low Cost Expendable Sensor (LCES) Develop Prototype	Q2							
Low Cost Expendable Sensor (LCES) At-Sea Testing		Q4	Q4					
Low Cost Expendable Sensor (LCES) Payload Improvements Concept					Q1			
Low Cost Expendable Sensor (LCES) Payload Improvements Perf Specification					Q4			
Low Cost Expendable Sensor (LCES) Payload Improvements EDM						Q4		
Low Cost Expendable Sensor (LCES) Payload Refinements							Q4	
Optical Sensor Networks (Concept/Perf. Spec/EDM)				Q3		Q2	Q4	
Specific Emitter Identification (SEI) Improvements (Concept/Perf. Spec/EDM)				Q3		Q2	Q4	
Imaging Processing Algorithms (Concept/Perf. Spec/EDM)					Q3	Q4	Q4	
Intelligence, Surveillance and Reconnaissance (ISR) Enhancements								
PSR At-Sea Testing	Q4	Q1						
PSR At-Sea Testing (Phase 2) (Concept/EDM/testing)					Q3	Q3	Q4	
Sensor Enhancements (Fusion) - Concept Evaluation				Q4				
Sensor Enhancements (Fusion) - Develop Specification					Q4			
Sensor Enhancements (Fusion) - EDM						Q4		
Sensor Enhancements (Fusion) - Testing, Refinement and Improvement							Q4	
Offboard Sensors Concept Evaluation	Q4							
Advanced EW Tuners Concept Studies			Q4					
Advanced EW Tuners - Performance Spec					Q1			
Advanced EW Tuners - EDM						Q3		
Advanced EW Tuners - OT/At-Sea Testing								Q1

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**3.149**	**5.562**	**5.623**	**5.843**	**5.930**	**6.060**	**6.175**	**6.296**
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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603562N Submarine Tactical Warfare System	1739 Submarine Special Operations Support

B. ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.149	5.562	5.623	5.843
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 2007 to conduct submarine technical testing and tactical development, and to collect Arctic environmental data.

FY07-09 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 2007 Ice Camp in the Arctic Ocean.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA4	PE 063562N Submarine Tactical Warfare System	1739 Submarine Special Operations Support	

C. OTHER PROGRAM FUNDING SUMMARY: N/A

D. ACQUISITION STRATEGY: *

NON-ACAT Program

E. MAJOR PERFORMERS: **

Command Submarine ForceUS Pacific Fleet (COMSUBPAC) - 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 VIRGINIA class submarine.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 063562N Submarine Tactical Warfare System	1739 Submarine Special Operations Support

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVRON Five	12.737	2.986	11/05	5.439	11/06	5.460	11/07	5.680	11/08	CONT.	CONT.	
Developmental Test & Evaluation	WR		0.015										0.015	
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGATE	0.200										0.200	
Developmental Test & Evaluation	WR	CMDR,2nd NAVCON BRIGATE	0.250										0.250	
Developmental Test & Evaluation	SS/CPFF	APL/University of Washington	3.294										3.294	
Tooling													0.000	
GFE													0.000	
Subtotal T&E			16.496	2.986		5.439		5.460		5.680		CONT.	CONT.	

Remarks:

Contractor Engineering Support														
Government Engineering Support														
Program Management Support		EG&G	0.481	0.153	11/05	0.113	11/06	0.153	11/07	0.153	11/08	CONT.	CONT.	
Travel			0.050	0.010	11/05	0.010	11/06	0.010	11/07	0.010	11/08	CONT.	CONT.	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.531	0.163		0.123		0.163		0.163		CONT.	CONT.	

Remarks:

Total Cost			17.623	3.149		5.562		5.623		5.843		CONT.	CONT.	

Remarks:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	PE 063562N Submarine Tactical Warfare System	1739 Submarine Special Operations Support

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Arctic Ice Exercise																																
ICEX Mission (at Sea) A Submarine arctic operation to improve the Navy's understanding of the Arctic.																																
Arctic Transit Mission (at Sea) An operation in support of the Navy's need to "surge" a submarine from the Atlantic to the Pacific (or vice versa) via the Arctic.																																
ICEX Workup (at Sea) A short underway period conducted in the submarine's local operating areas prior to embarking on an Arctic mission.																																
B. PROGRAM CHANGE SUMMARY: **ICEX Training** Provides classroom training to the ship's watchstanders by the Ice pilot(s) to practice under-ice shiphandling.																																
ICE Camp (Arctic Ocean) A remote field station set up in the Arctic to conduct scientific and tactical testing.																																
SCICEX Accommodation Support scientific understanding of the Arctic Ocean.																																

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

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA4**					PROJECT NUMBER AND NAME 1739 Submarine Special Operations Support			
Schedule Profile	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
ICEX Mission (at Sea)		1Q-4Q		1Q-4Q		1Q-4Q		1Q-4Q
Arctic Transit Mission (at Sea)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
ICEX Workup (at Sea)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
ICEX Training	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
ICE Camp (Arctic Ocean)		1Q-4Q		1Q-4Q		1Q-4Q		1Q-4Q
SCICEX Accommodation	1Q-4Q		1Q-4Q		1Q-4Q		1Q-4Q	
B. PROGRAM CHANGE SUMMARY:								

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**20.844**	**21.689**	**30.858**	**31.134**	**31.131**	**30.988**	**31.524**	**32.069**
2196/Design Tools, Plans & Concepts	**11.635**	**2.142**	**1.364**	**1.383**	**1.416**	**1.397**	**1.423**	**1.446**
3161/NAVSEA Tech Authority	**0.000**	**9.535**	**29.494**	**29.751**	**29.715**	**29.591**	**30.101**	**30.623**
9999/Congressional Adds	**9.209**	**10.012**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

(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.

(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. The research products developed by this project directly influence future acquisition programs by providing a range of technically acceptable alternatives and evaluation of emerging technologies.

(U) Project 9999: See project description on the R2a.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget:	21.221	21.549	30.937	30.897
FY 2008/09 President's Budget:	20.844	21.689	30.858	31.134
Total Adjustments	-0.377	0.140	-0.079	0.237
Summary of Adjustments				
SBIR Reductions	-0.235	0.000	0.000	0.000
Congressional Actions	-0.089	0.000	0.000	0.000
Program Adjustments	-0.053	-0.082	-0.079	0.237
Reduction to Growth	0.000	-9.828	0.000	0.000
Congressional Adds	0.000	10.050	0.000	0.000
Subtotal	-0.377	0.140	-0.079	0.237

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.

Technical:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**11.635**	**2.142**	**1.364**	**1.383**	**1.416**	**1.397**	**1.423**	**1.446**
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, surface ship mission effectiveness 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, weapons 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.690	0.728	0.537	0.547
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform analysis for potential ships and Force Architecture 5-10 years out in SCN plan.
FY06: Force Formulation Processes; Up River, Inland Combatants; Focused Mission Combatant Study; Radar Signature Evaluation Methodology; Fuel Study-Phase 2; Low Risk Composites-Phase 2.
FY07: Directed Energy Weapon Impacts; Barely Manned Patrol Craft Study; Small Combatant Study-Pase 2; Force Architecture Studies to support NECC; ASW-LCS Studies; T3-LCS concept
FY08: LSD (X) concept studies; Driected Energy Impacts-Phase 2; Barely Manned Patrol Craft Design; Gap analysis for Expeditionary Strike Force; Competition for New Risk Area Projects
FY09: Concept designs for NECC/ESF Gap Analysis; Competition for New Risk Area Projects

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.210	0.436	0.250	0.245
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Total Ship Technology Assessment: Analyze the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts, technologies and warfare systems.
FY06: Technology Knowledge Mgmt System (TKMS) Implementation; TKMS S/W procurement/integration; TKMS Pilot Task (PEO LMW and PEO Ships Focused); DARPA Alignment Pathway
FY07: Advanced Model TKMS for operational use (PEO LMW and PEO Ships focus); TKMS Capability Extensions based on Operational Feedback and emergent Customer Requirements
FY08: Support LSD Replacement AOA effort with technology identification using TKMS; Competition for New Risk Area Projects
FY09: Support LSD Replacement Design Team with tech. assessment, selection, and monitoring using TKMS; Analyze TKMS needs of TAO Replacement; Competition for New Risk Area Projects

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.631	0.692	0.402	0.416
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Concept Design and Engineering Tools, Methods, and Criteria: Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies.
FY06: NEMO program-automated Arrangements,-Multi Hull Optimization; Advanced Surface Ship Evaluation Tool (ASSET) Expanded Flexibility; COGENT UTE/TIES Integration; STEP AP233 for Sys. Engineering
FY07: ASSET Expanded Capability; COGENT UTE/TIES (II); LEAPS Composites Analysis; LEAPS Apps for Small Craft; Competition for New Risk Area Projects
FY08: ASSET Expanded Capability; LEAPS Composites Analysis (II); LEAPS Distribution System Modeling; LEAPS Apps for Small Craft (II); Competition for New Risk Area Projects
FY09: ASSET Expanded Capability; LEAPS Distribution System Modeling (II);LEAPS Apps for Small Craft (III); Competition for New Risk Area Projects

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.246	0.286	0.175	0.175
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

((U) Mission Systems Interface Development and Demonstration: Requirements development to counter asymmetric, peer and littoral enemies with tailored, modularized mission systems.
FY06: Special Operations mission package defn; Vertical Take Off and Landing Airborned Early Warning System (VTOL AEW) concept quick-look; Over The Horizon (OTH) communications relay;
FY07: VTOL AEW requirements analysis and JCTD planning; OTH prototype test and evaluation; Modularized weapon system interface definition and documentation
FY08: OTH - Unmanned Vehicle test and evaluation; Small combatant / craft stabilized weapon system concept development and ship impact analysis
FY09: Expeditionary Strike Force modular mission package definition; small combatant in-theater rearming concept development

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.464	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Concept Advanced Development: Directly supports the Navy's ability to understand risk and ROM cost of surface warfare assets; Pre-Milestone A ship and craft design and analysis. (CPSD 1)
FY06: Fuel Economy Impact Study, Deployable/Recoverable OTH Comm Relays, Plug-n-fight Architecture model, Surface Force Mission Effectiveness (moves to project 3161 in FY07)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.490	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

((U) Ship Design and Certification Tools: Evaluation tools to certify the safety and mission capability of ships and submarines. Integrated strategy for NAVSEA suite used to support of ship certs. (CPSD 2)
FY06: NEMO-LEAPS Integrator phase 3; LEAPS Common ship Engineering Algorithm Development; issue new relaease of LEAPS (moves to project 3161 in FY07)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.311	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Engineering and Technical Data Exchange: Develop and implement a framework of standardized interfaces for ship development and engineering systems. (CPSD 3)
FY06: LEAPS Common Translator; LEAPS Modeling and Simulation Translator; issue new release of LEAPS (moves to project 3161 in FY07)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.283	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Next Generation USV: Development and demonstration of Unmanned Surface Vehicle (USVs) with focus on autonomous behavior, modularity, new ship classes for pre AoA studies. (CPSD 4)
FY06: Automated Launch and Retrieval System Concept Report; Autonomous Path Selection and Collision Avoidance System Design (moves to project 3161 in FY07)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.425	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) High Speed Ships and Craft: Investigate concepts for future high speed ships and craft that promise improved mission effectiveness in mobility, survivability, and warfare mission areas. (CPSD 5)
FY06: High Speed Propulsion Plant Architecture; Ship Synthesis Modeling (moves to project 3161 in FY07)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.707	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Alternative Power Systems: Investigate concepts for ships and craft with alternative power/propulsion systems evaluating effectiveness in mobility, survivability, and warfare mission areas. (CPSD 6)
FY06: Propulsion Plant Architecture Study; Energy Requirements Study; Cost/Risk Comparison of Propulsion Systems (moves to project 3161 in FY07)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.278	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Engineering & Analysis Technology Center (formerly Hydrodynamic/Hydroacoustic Technology Center (H/HTC)): Provides Government activities, shipbuilders, academia and contractors the following (FY06-FY09): 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. (moves to project 3161 in FY07) (CPSD 7)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.990	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Future Submarine Design: Develop ship concept studies and evaluate technologies to define the Next Generation Submarine, common SSN-SSBN Hull and Payload Modularity. (CPSD 8)
FY06: SUBCODE Concept Design Tool development; Next Generation Submarine Concepts; Next Generation Submarine Technologies Study; Submarine Concept Design Processes and Standards (moves to project 3161 in FY07)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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	

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.088	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Embedded Interoperability Engineering: Executes a dedicated process for evaluating the interoperability performance of warfare systems early in the acquisition cycle, prior to certification. (CPSD 9)
FY06: CVN 65, 75 interoperability assess/test; BFIMS One List database creation; Distributed Eng Plant support: AEGIS B/L 7.1.1.1, B/L 6.1.7, CVN 68, LHA 4 APIT, DEP sup. (moves to project 3161 in FY07)

Mission Capability Systems Engineering	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.822	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Mission Capability Systems Engineering: Develop force level systems engineering criteria and guidance at the systems of systems (SoS) and Familiy of Systems (FoS) level. (CPSD 10)
FY06: Define Warfare Systems Engineering Process; Review Mission Capability Based Requirements in Several Systems; Review certain architectures for interoperability (moves to project 3161 in FY07)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
(U) Related RDT&E										
(U) PE 0603512N (Carrier Systems Development)	165	156.248	84.806	72.683	61.070	44.864	44.477	46.373		
(U) PE 0603513N (Shipboard Systems Component Development)	44.476	49.993	9.450	9.561	9.606	9.622	9.791	9.967		
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)	26.291	25.766	18.736	10.642	25.794	12.696	3.639	0.638		
(U) PE 0604300N (SC21 Total Ship Systems Engineering)	1.100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464		
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)	56.415	51.729	62.404	73.698	69.270	101.536	91.287	90.106		
(U) PE 0603582N (Combat System Integ/Strike Force Interoperability)	74.626	64.088	53.427	53.435	39.139	38.621	38.12	37.621		

D. 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.

E. 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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**			PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design					PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Systems Engineering	various	Other Various Contractors	58.612	2.560	various	0.334	various	0.271	various	0.271	various	Continuing	Continuing	
Engineering Development	WX & RX	NAVSEA, Dahlgren Div,	3.806	2.906	various	0.835	various	0.275	various	0.275	various	Continuing	Continuing	
		Dahlgren, VA												
	WX&RX	NSWC PHD		1.788	various									
Demonstration & Evaluation	WX & RX	NAVSEA, Carderock Div,	35.009	4.201	various	0.853	various	0.748	various	0.767	various	Continuing	Continuing	
		West Bethesda, MD												
	WX & RX	SPAWAR		0.150	various	0.100	various	0.050	various	0.050	various	Continuing	Continuing	
Licenses													0.000	
Tooling	WX\RXPD	SPAWAR	10.391									0.000	10.391	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			107.818	11.605		2.122		1.344		1.363		0.000	124.252	
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:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**			PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design					PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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													0.000	
Travel			0.030	0.030		0.020		0.020		0.020		Continuing	Continuing	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.030	0.030		0.020		0.020		0.020		0.000	0.090	
Remarks:														
Total Cost			107.848	11.635		2.142		1.364		1.383		0.000	124.372	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
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	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Engineering Milestones																																
Pre-MS A Ship Concept Studies																																
Capability to Assess Alt & Adv Hull Forms																																
Force Architecture Including Futures & Force Structure Alt																																
Initial Open Systems Architecture & other Technology Assessments																																
Assessment of Technology Benefits																																
Technology Management & Cost Assessment Methods																																
CPSD projects 10 projects that move to 3161 in FY07																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
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			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Pre-MS A Ship Concept Studies	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Capability to Assess Alt & Adv Hull Forms	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Force Architecture Including Futures & Force Structure Alt		Q1 Q2 Q3 Q4						
Initial Open Systems Architecture & Other Technology Assessments		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4				
Assessment of Technology Benefits	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4				
Technology Management & Cost Assessment Methods	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4				
CPSD projects (10), transition to 3161 in FY07	Q1 Q2 Q3 Q4							

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEM 0603563N/Ship Co	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design			PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**9.535**	**29.494**	**29.751**	**29.715**	**29.591**	**30.101**	**30.623**
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; advanced submarine concepts, surface ship & unmanned surface vehicle concepts; interoperability; and development of systems level engineering criteria 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 forces 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. This project also provides innovative solutions for current Fleet issues involving Technical Authority, such as current interoperability issues with new systems or platforms.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.584	2.022	2.019
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Concept Advanced Development: Directly supports the Navy's ability to understand risk and ROM cost of surface warfare assets; Pre-Milestone A ship and craft design and analysis. (CPSD 1)
FY06: Fuel Economy Impact Study, Deployable/Recoverable OTH Comm Relays, Plug-n-fight Architecture model, Surface Force Mission Effectiveness (project 2196 in FY06)
FY07: Deployable/Recoverable OTH Comm Relays Prototype Development/Transition; High Speed Open Ocean Combatant Structural Design Criteria; Competition for New Risk Area Projects
FY08: Friction Stir Welding of Al for Naval Applications; Future Expeditionary Warfare Concept Study; UCAV Ship Support Study; High Speed Open Ocean Phase 2; Competition for New Risk Area

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.547	2.754	2.859
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Design and Certification Tools and Technical Data Exchange: Evaluation tools to certify the safety and mission capability of ships and submarines. Integrated strategy for NAVSEA suite used to support of ship certs. (CPSD 2)
FY06: NEMO-LEAPS Integrator phase 3; LEAPS Common ship Engineering Algorithm Development; issue new relaease of LEAPS (project 2196 in FY06). LEAPS Common Translator; LEAPS Modeling and Simulation Translator; issue new release of LEAPS (project 2196 in FY06)
FY07: NEMO-LEAPS Integrator phase 4; Fleet Incident Situational Response program; LEAPS Modeling and Simulation Translator phase 2.
FY08: Extend tools and ship model integration supporting Fleet Incident Situational Response program. Extend and integrate modeling & simulation tools supporting LFT&E. Competition for New Risk Area Projects.
FY09: Extend and integrate analytical tools supporting high performance naval ship technologies. Demo tech data exchange between LFT&E M&S environment and shipbuilder CAD environments; Extend M&S integrated environmental to additional engineering disciplines. Competition for New Risk Area Projects.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.754	2.654	2.649
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Advanced Ship Systems Development: Develop and validate advanced tools and processes to reduce technical risk to naval platform acquisition programs in support of naval Technical Authority (CPSD 3).
FY07: Conduct Future Fleet Engineering Systems and Service Life Studies; Initiate development of Full Ship Finite Element Modeling Baseline for Future Ships; Initiate development of Acoustic Spectrum Management Tools for Surface Ships.
FY08: Continue development and validation of Full Ship Finite Element Modeling Baseline; Expand development of Acoustic Spectrum Management Tools for Surface Ships capabilities and resolution; Initiate platform ballasting and deballasting design tool studies. Initiate Open Systems Architecture Baseline Combat System Studies for transition into new acquisition platfoms and in-service ship upgrades.
FY09: Validate Future Fleet Engineering Systems and Service Life Studies; Continue development and validation of Full Ship Finite Element Modeling Baseline and expand resolution for damage control assessment; Continue platform ballasting and deballasting design tool studies; Validate ship system commercial design tools for advanced material handling and machining.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.757	1.767	1.764
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Next Generation USV: Development and demonstration of Unmanned Surface Vehicle (USVs) with focus on autonomous behavior, modularity, new ship classes for pre AoA studies. (CPSD 4)
FY06: Automated Launch and Retrieval System Concept Report; Autonomous Path Selection and Collision Avoidance System Design (project 2196 in FY06)
FY07: Automated Launch and Retrieval System Prototype; Autonomous Path Selection and Collision Avoidance Prototype; Rapidly Deployable MUTE USV Design; Payload Pwr Support Concept Design
FY08: Rapidly Deployable MUTE USV Prototype; Payload Power Support Prototype; Long Range Endurance design; Autonomous Health Monitoring and Recovery design; Competition for New

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.022	3.615	3.609
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) High Speed Ships and Craft: Investigate concepts for future high speed ships and craft that promise improved mission effectiveness in mobility, survivability, and warfare mission areas. (CPSD 5)
FY06: High Speed Propulsion Plant Architecture; Ship Synthesis Modeling (project 2196 in FY06)
FY07: High Speed Propulsion Plant Architecture-phase 2; Ship Synthesis Modeling-phase 2; Propulsion Systems Engineering; Competition for New Risk Area Projects
FY08: High Speed Advanced Actuators design and prototype construction; Plant architecture systems engineering process integration into NVR; Competition for New Risk Area Projects
FY09: Drag Reduction Transition to fleet demonstrator; AWJ-21 design tool validation and NVR integration; Competition for New Risk Area Projects

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.715	2.410	2.405
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Alternative Power Systems: Investigate concepts for ships and craft with alternative power/propulsion systems evaluating effectiveness in mobility, survivability, and warfare mission areas. (CPSD 6)
FY06: Propulsion Plant Architecture Study; Energy Requirements Study; Cost/Risk Comparison of Propulsion Systems (project 2196 in FY06)
FY07: Propulsion Plant Architecture Study-phase 2; Nuclear Frigate Preliminary Design; Fuel Cell Concept SYSENG and validation with LDTS Data; Competition for New Risk Area Projects
FY08: Fuel Cell At Sea Demonstration design; Rim Driven Ducted Propulsor design; Competition for New Risk Area Projects
FY09: Fuel Cell At Sea Demonstration prototype construction; Rim Driven Ducted Propulsor prototype construction; Competition for New Risk Area Projects

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.199	1.197
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Ship Engineering & Analysis Technology Center (formerly Hydrodynamic/Hydroacoustic Technology Center (H/HTC)): Provides Government activities, shipbuilders, academia and contractors the following (FY06-FY09): 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. (project 2196 in FY06) (CPSD 7)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.715	4.825	4.817
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Future Submarine Design: Develop ship concept studies and evaluate technologies to define the Next Generation Submarine, common SSN-SSBN Hull and Payload Modularity. (CPSD 8)
FY06: SUBCODE Concept Design Tool Dev.; Next Generation Sub Concepts; Next Generation Submarine Technologies Study; Submarine Concept Design Processes and Standards (project 2196 in FY06)
FY07: Navy After Next Tech Validations; SUBCODE Concept Design Tool Dev - phase 2; Technical Warrant Holder Concept Validation Support; Submarine Design Processes and Standards Development
FY08: Navy After Next Tech Validations; Technical Warrant Holder Concept Validation Support; SUBCODE Concept Design Tool Dev - phase 3; Submarine Design Processes and Standards Development
FY09: Navy After Next Tech Validations; Technical Warrant Holder Concept Validation Support; SUBCODE Concept Design Tool Dev - phase 4; Submarine Design Processes and Standards Development

Embedded Interoperability Engineering	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.258	4.124	4.316
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Embedded Interoperability Engineering: Establishes and executes a dedicated process for evaluating the interoperability performance of warfare systems early in the acquisition cycle, prior to certification. Ensures fewer mission critical system failures that would degrade the warfighting capability that is ultimately fielded. Focus on emerging Open Architecture warefare systems. (CPSD 9)
FY06: CVN 69, 74 interoperability test/assessment; BFIMS One List database creation; Distributed Eng Plant support: AEGIS B/L 7.1.1.1, B/L 6.1.7, CVN 68, LHA 4 APIT report (project 2196 in FY06).
FY07: Develop tactics, techniques and procedures (TTP) for CVN 69, 74 based on FY06 owrk; Interoperability test and assessment for LCS-1, CVN 68, LHD 7 and Aegis Baseline 7. Develop BFIMS.
FY08: Develop TTP for LCS-1, CVN 68, LHD 7 and Aegis B/L 7 based on FY07 work; Interoperability test and assessment for LCS-2, CVN 77, DDG Modernization and DDG 1000.
FY09: Develop TTP for LCS-2, CVN 77 and DDG Moderniation based on FY08 work; Interoperability test and assessment for CG Modernization, DDG 1000 and CVN 21 (CVN 78).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

B. Accomplishments/Planned Program

Mission Capability Systems Engineering	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.183	4.124	4.116
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Mission Capability Systems Engineering: Develop force level systems engineering criteria and guidance at the systems of systems (SoS) and Familiy of Systems (FoS) level. (CPSD 10)
FY06: Define Warfare Systems Engineering Process; Review Mission Capability Based Requirements in Several Systems; Review certain architectures for interoperability (project 2196 in FY06)
FY07: Continue to refine the Warfare Systems Engineering Process; update concepts to Mission Capability Based Requirements; review Warfare System Integrated Architectures for interoperability; evaluate the development of Warfare Systems Integrated Architectures and ensure alignment to FORCEnet Architecture; evaluate systems engineering principles to Sea Trial Experiments aligned with mission capability gaps. Develop transition documentation for experiments achieving positive military utility assessments; analyze and develop ground level Key Performance Parameters for use across all AT/FP programs.

FY08: Continue to develop Integrated Architectural views for Warfare Systems, ensuring alignment to FORCEnet Architecture; manage the NAVSEA Sea Trial effort, identifying, defining and evaluating Sea Trial initiatives addressing documented capability gaps, providing technical reviews in the evaluation of initiatives as requested by the Fleet Collaborative Teams (FCT); continue to analyze and develop experiments for achieving positive military utility assessments; continue to analyze and develop ground level Key Performance Parameters for use across all AT/FP programs.

FY09: Continue to manage the NAVSEA Sea Trial effort, identifying, defining and evaluating Sea Trial initiatives addressing documented capability gaps, and providing technical support in the evaluation of initiatives as requested by the FCTs; develop transition documentation for experiments achieving positive military utility assessments; transition Key Performance Parameters for use across all AT/FP programs in new construction programs.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
(U) Related RDT&E										
(U) PE 0603512N (Carrier Systems Development)	110,805	153.894	88.064	71.937	60.369	44.339	44.097	46.127		
(U) PE 0603513N (Shipboard Systems Component Development)	44.518	14.135	9.424	9.456	9.493	9.517	9.719	9.926		
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)	26.291	21.314	18.627	10.560	25.588	12.609	3.622	0.636		
(U) PE 0604300N (SC21 Total Ship Systems Engineering)	1.100.804	817.528	617.923	652.858	873.516	997.010	835.763	700.520		
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)	56.415	72.055	62.114	73.073	68.650	100.768	90.811	89.846		
(U) PE 0603582N (Combat System Integration/Strike Force Interoperabili	74.626	62.095	53.311	52.867	38.639	38.164	37.806	37.445		

D. 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.

E. 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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603563N/Ship Concept Advanced Design

PROJECT NUMBER AND NAME: 3161/NAVSEA Technical Authority

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
Systems Engineering	various	Various Contractors				2.700	various	6.150	various	6.150	various	Continuing	Continuing	
	WX&RX	NSWC, NUWC, CDSA				2.335	various	10.750	various	10.710	various	Continuing	Continuing	
Engineering Development	WX&RX	NSWC, NUWC				1.500	various	6.750	various	6.750	various	Continuing	Continuing	
Demonstration & Evaluation	WX&RX	NSWC				1.400	various	3.494	various	3.791	various	Continuing	Continuing	
	WX&RX	SPAWAR				1.500	various	2.250	various	2.250	various			
Licenses													0.000	
Tooling												0.000	0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.000	0.000		9.435		29.394		29.651		0.000	68.480	

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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**			PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design					PROJECT NUMBER AND NAME 3161/NAVSEA Technical Authority						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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													0.000	
Travel						0.100		0.100		0.100		Continuing	Continuing	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.100		0.100		0.100		0.000	0.300	
Remarks:														
Total Cost			0.000	0.000		9.535		29.494		29.751		0.000	68.780	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
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	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Engineering **Milestones**																																
Ship Concepts Advanced Development																																
Ship Design and Certification Tools and Technical Data Exchange																																
Advanced Ship Systems Development																																
Next Generation USV																																
High Speed Ships and Craft																																
Alternative Power Systems																																
Ship Engineering & Analysis Technology Center																																
Future Submarine Design																																
Embedded Interoperability Engineering																																
Mission Capability Systems Engineering																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
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			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Cross Platform Systems Development		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Ship Concepts Advanced Development		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Ship Design and Certification Tools and Technical Data Exchange		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Advanced Ship Systems Development		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Next Generation USV		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
High Speed Ships and Craft		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Alternative Power Systems		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Ship Engineering & Analysis Technology Center		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Future Submarine Design		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Embedded Interoperability Engineering		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Mission Capability Systems Engineering		Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9816N/9816C				
Autonomous Maritime Navigation Program	6.589	5.579		

(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	0.970			

(U) The purpose of this project is to develop a Security Video Distribution System for shipboard force protection designed to provide a ship-wide ability to both view and control live and stored video using the shipboard wired and wireless network.

	FY 06			
9818N				
Video Analysis R&D	1.650			

(U) The purpose of this project is to develop, test and evaluate advanced video technologies such as infra-red and other imaging/processing techniques for accessing engineering and propulsion plant status onboard US Navy ships.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9990N				
Advanced Capabililties Group	0.000	2.092		

(U) To conduct a series of studies in FY2007 in topics ranging from capability based costing of ship platforms to early stage assessment of mission effectiveness and system performance.

	FY 06	FY 07		
9991N				
Machinery Analytics for Controls & Monitoring Sys	0.000	1.345		

(U) This add will integrate remote monitoring technologies with Navy shipboard CBM systems to significantly improve diagnostics, troubleshooting, remote monitoring and assessment for distance support and maintenance planning, informing shipboard operators at the first sign of pending problems and enabling them to take proactive corrective measures before a failure occurs.

	FY 06	FY 07		
9992N				
Scout Radar Stealth Upgrades for Special Warfare C	0.000	0.996		

(U) To further refine the initial process of converting a Low Probability of Intercept (LPI) Radar with a six foot scanner to a LPI Radar with a smaller scanner capable of being used on Combatant Craft (small boats).

Exhibit R-2, RDT&E Budget Item Justification								Date: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**					R-1 ITEM NOMENCLATURE **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**26.291**	**25.766**	**18.736**	**10.642**	**25.794**	**12.696**	**3.639**	**0.638**
0408 Ship Development (ADV)	**0.000**	**0.556**	**3.542**	**0.564**	**0.593**	**0.613**	**0.625**	**0.638**
3127 Sea Base to Shore Connectors	**14.026**	**13.329**	**13.181**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
3131 Intratheater Connectors	**4.669**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
3132 Intertheater Connectors	**7.596**	**7.348**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
3195 JCC(X)	**0.000**	**0.000**	**2.013**	**10.078**	**25.201**	**12.083**	**3.014**	**0.000**
Support for Naval Ship Hydrodynamic 9993N Test Facilities*	**0.000**	**4.533**	**0.000**	**0.000**	**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). Th 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 impa 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 PE0604567N. JCC(X) is a mobile, self-sustaining platform (that may be based on the LPD 17 hull form) with robust C4ISR capability for a Joint Force Commander and staff and provides in-theater command and control should a land-based headquarters be unavailable, constrained or threatened. RDT&E profile supports necessary preliminary efforts in order to award detail design and procurement contract.

***Issue 9993N is a conressional add for support of Naval Ship Hydrodynamic Test Facilities**

B. Program Change Summary:

	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget.	26.615	21.314	13.687	0.588
FY 2008 PB Controls	26.291	25.766	18.736	10.642
Total Adjustments	-0.324	4.452	5.049	10.054
Summary of Adjustments				
Congressional Action	0.021	4.533	0.000	0.000
Small Business Innovation	-0.327	0.000	0.000	0.000
Program Adjustments	-0.018	-0.081	5.049	10.054
Subtotal	-0.324	4.452	5.049	10.054

C. Other Program Funding Summary: See individual R-2as.

D. Acquisition Strategy: Not Applicable

E. Performance Metrics: Not Applicable

Exhibit R-2a, RDT&E Project Justification						Date: February 2007		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**					PROJECT NUMBER AND NAME **0408 Ship Development (ADV)**		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**0.556**	**3.542**	**0.564**	**0.593**	**0.613**	**0.625**	**0.638**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(0408) Ship Development

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.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.000	0.556	3.542	0.564
RDT&E Articles Quantity	0.000	0.000	0.000	0.000

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.

$3M in FY08 is designated for RDT&E efforts for the AGOR Oceanographic Ships Program.

Exhibit R-2a, RDT&E Project Justification		Date: February 2007
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)**

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
N/A										
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D. ACQUISITION STRATEGY:

E. MAJOR PERFORMERS: TBD

Exhibit R-3 Cost Analysis (page 1)						Date: February 2007						
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**		PROGRAM ELEMENT **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**				PROJECT NUMBER AND NAME **0408 Ship Development (ADV)**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Component Development												
Ship Design												
Ship Suitability												
Systems Engineering												
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support						3.000					3.000	
Software Development												
Training Development												
Integrated Logistics Support				0.100	2 QTR	0.100	2 QTR	0.100	2 QTR	0.460	0.760	
Configuration Management				0.400	1 QTR	0.400	1 QTR	0.404	1 QTR	1.753	2.957	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.500		3.500		0.504		2.213	6.717	
Remarks:												

Exhibit R-3 Cost Analysis (page 2)						Date: February 2007						
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**		PROGRAM ELEMENT **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**				PROJECT NUMBER AND NAME **0408 Ship Development (ADV)**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program management Support	Various	Various	0.000	0.056	1 QTR	0.042	1 QTR	0.060	1 QTR	0.256	0.414	
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.056		0.042		0.060		0.256	0.414	
Remarks:												
Total Cost			0.000	0.556		3.542		0.564		2.469	7.131	
Remarks:												

EXHIBIT R4, Schedule Profile		Date: February 2007
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)**

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Concept/Tech Development Analysis					△	Start				Ongoing Concept/Tech Development Analysis																					Finish	△
Initial Technology Plan							△	Submit Initial Technology Plan																								
Technology Plan Updates										△	Update			△	Update			△	Update			△	Update			△	Update			△	Update	

Exhibit R-4a, Schedule Detail							Date: February 2007		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**	PROGRAM ELEMENT **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**						PROJECT NUMBER AND NAME **0408 Ship Development (ADV)**		
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
Concept/Tech Development Analysis		1Q-4Q	1Q-4Q	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	2nd Qtr	2nd Qtr	

Exhibit R-2a, RDT&E Project Justification						Date: February 2007		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**14.026**	**13.329**	**13.181**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

SeaBase to Shore Connectors (3127)

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.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	14.026	13.329	13.181	0.000
RDT&E Articles Quantity	0.000	0.000	0.000	0.000

Complete ICD in the beginning of FY 07
Start and complete AoA in FY07
Started Concept Refinement in FY 06 to complete in FY07: Refines the initial concept and develops a technology development strategy.
Start preparation of Capability Development Document (CDD) in FY 08 to complete in FY10: The CDD outlines an affordable increment of militarily useful, logistically supportable and technically mature capability.
Prepare for and participate in Milestone A Review in FY07.

Exhibit R-2a, RDT&E Project Justification		Date: February 2007
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**

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
SCN 0204411N Surface Connector (55112)	0.000	0.000	0.000	0.000	0.000	217.080	0.000	215.881	3773.300	4206.261
RDT&E 0604567 Sea Base Connector (3133)	0.000	0.000	14.633	26.326	10.023	2.030	2.069	2.107	0.000	57.188

D. ACQUISITION STRATEGY:

FY05 - ICD, FY06 - AoA, FY07 CDD, FY07 Concept Refinement, FY07 Technology Development

E. MAJOR PERFORMERS:

Field Activities & Locations - Work Performed

NSWC Philadelphia, Phil. PA.	Philadelphia, PA	Systems Engineering - Propulsion Systems
NSWC Panama City, FL	Panama City, FL	Systems Engineering - Hull, Mechanical & Electrical
NUWC Keyport, FL	Keyport, FL	Systems Engineering - Command and Control

Contractors & Locations - Work Performed

Textron Marine & Land Systems	New Orleans LA	SSC Concept Study & Skirt Technology
Rolls-Royce	Walpole, MA	Marine Gas Turbine
Goodrich	Jacksonville, FL	Composite Fan propulsor Assembly
NG Electric Systems	Sunnyvale, CA	Integrated Power Systems and Mechanical Drive Options
Umoe Mandal	Virginia Beach, VA	Concept Study & Fiber Reinforced Plastic
Alion Science and Tech.	Chicago, IL	Hybrid ACV Propulsion
Technology Systems Inc	Brunswick, MA	Augmented Reality Visualization

Universities & Locations - Work Performed

Penn State ARL	State College, PA	Maintenance Network

Exhibit R-2a, RDT&E Project Justification						Date: February 2007		
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**4.669**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(3131) Intratheater Connectors develops future capabilites 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

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	4.669	0.000	0.000	0.000
RDT&E Articles Quantity	0.000	0.000	0.000	0.000

R&D Efforts for Intratheater Connector - commercial technology integration analysis, risk mitigation, analysis of alternatives, concept refinement, and development of analysis of performance specification.

Exhibit R-2a, RDT&E Project Justification		Date: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDTEN/BA-4	**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**	**3131 Intratheater Connectors**

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0204228N SCN/BLI3043 Intratheater Connector Surface Support	0.000	0.000	0.000	174.310	174.288	181.925	0.000	0.000	TBD	530.523
PE 0604567N (U)SHIP CONTRACT DESIGN/ LIVE FIRE T&E/3134 Intratheater Connectors	1.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.871
PE 0208058N (U)JOINT HIGH SPEED VESSEL (JHSV)										
3131 Intratheater Connectors (Concept Studies)	0.000	11.861	5.041	3.948	1.768	2.468	0.007	0.004	TBD	25.086
3134 Intratheater Connectors (Contract Design)	0.000	2.248	13.893	8.012	6.882	1.341	0.009	0.005	TBD	32.376

D. ACQUISITION STRATEGY:

Feasibility studies will be conducted to determine the best designs to meet new Joint Service requirements for intratheater connectors.

E. 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

Exhibit R-2a, RDT&E Project Justification						Date: February 2007		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**					PROJECT NUMBER AND NAME **3132 Intertheater Connectors**		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**7.596**	**7.348**	**0.000**	**0.000**	**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 sea base. The ship will provide an improved MEB force closure for the sea base by deploying troops, non-self deploying aircraft and other high demand/low density (HD/LD) items via rapid surface strategic lift directly to the sea base. 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.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	7.596	7.348	0.000	0.000
RDT&E Articles Quantity	0.000	0.000	0.000	0.000

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.

Engineering and Acquisition Support - Engineering and program management including requirements development, acquisiton documentation development in support of acquisition milestones. Concept studies in support of Concept Decision and AOA.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification	**FY 2008/FY2009 OSD/OMB BES ($M)**	**DATE:** Date: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDTEN/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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.896	3.095	#REF!	#REF!
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity	2.700	4.253	#REF!	#REF!

Engineering and Acquisition Support: Engineering and program management including requirements development, acquisiton documentation development in support of acquisition milestones. Concept studies in support of Concept Decision and AOA.

Exhibit R-2a, RDT&E Project Justification		Date: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDTEN/BA-4	**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**	**3132 Intertheater Connectors**

C. OTHER PROGRAM FUNDING SUMMARY:

N/A

D. ACQUISITION STRATEGY:

Concept studies will be conducted to determine how to best meet new Navy requirements for the intertheater connector.

E. MAJOR PERFORMERS:

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

Contractors & Locations - Work Performed

CSC, Washington, DC - Engineering Support

Universities & Locations - Work Performed

CLASSIFICATION: **UNCLASSIFIED**

EXHIBIT R-2A, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-5	**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**	**3195 JCC(X)**

COST ($ in Millions)	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**
JCC(X)	**0.000**	**0.000**	**2.013**	**10.078**	**25.201**	**12.083**	**3.014**	**0.000**

(U) A. Mission Description and Budget Item Justification:
(3195) JCC(X) is a mobile, self-sustaining platform (that may be based on the LPD 17 hull form) with robust C4ISR capability for a Joint Force Commander and staff and provides in-theater command and control should a land-based headquarters be unavailable, constrained or threatened.

(U) B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Ship Preliminary Design and Feasibility Studies	0.000	0.000	2.013	10.078

Budgeted funds will fund JCC(X) related ICD, CD, AOA, CDD and other JCC(X) preliminary design and feasibility study efforts necesary to obtain a Program Decision to procee with functional designs in FY 2010.

(U) C. OTHER PROGRAM FUNDING SUMMARY

Line Items No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY2012	FY2013
PE: 0603564N/Project 3195	0	0	2.013	10.078	25.201	12.083	3.014	0.000
BLI: 5521500 (JCC(X) SCN)							2,229,089.0	0.000

(U) D. ACQUISITION STRATEGY

(U) E. MAJOR PERFORMERS

CLASSIFICATION:

FY 2008/FY2009 OSD/OMB BES ($M)														
Exhibit R-3 Cost Analysis								DATE: February 2007						
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**		PROGRAM ELEMENT **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**						PROJECT NUMBER AND NAME **3195 JCC (X)**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
JCC(X) Ship Preliminary Design & Feasibility Studies to achieve JCC(X) AcquisitionMilestones	Various	Various	0.000		N/A	0.000	N/A	2.013	Various	10.078	Various	40.298	52.389	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			0.000	0.000		0.000		2.013		10.078		40.298	52.389	
: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														

CLASSIFICATION:

FY 2008/FY2009 OSD/OMB BES ($M)														
Exhibit R-3 Cost Analysis (page 2)														
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT												
RDTEN/BA-4		**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**												
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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													0.000	
Travel													0.000	
Transportation													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			0.000	0.000		0.000		2.013		10.078		40.298	52.389	
Remarks:														

DATE:
February 2007

PROJECT NUMBER AND NAME
3195 JCC (X)

EXHIBIT R4, Schedule Profile		Date: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDTEN/BA-4	**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**	**3195 JCC(X)**

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
JCC(X) Ship Preliminary Design & Feasibility Studies to achieve JCC(X) Acquisiton Milestones																																
MS A (Concept Decision)												△	**MS A**																			
MS B																									△	**MS B**						
Detailed Design & Construction																										△	**Initiate Production Contract Award**					

Exhibit R-4a, Schedule Detail						Date: February 2007		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA-4**	PROGRAM ELEMENT **PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**					PROJECT NUMBER AND NAME **3195 JCC(X)**		
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
JCC(X) Ship Preliminary Design & Feasibility Studies to achieve JCC(X) Acquisiton Milestones								
MS A (Concept Decision)			4Q					
MS B							1Q	
Detailed Design and Construction							2Q - 4Q	1Q - 4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDTEN/BA-4	**PE 0603564N/SHIP PRELIM DESIGN & FEASIBILITY STUDIES**	9993N Hydrodynamic Test Facilities

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9993N				
Support for Hydrodynamic Test Facilities	0.000	4.533	0.000	0.000

(U) This Congressional add is for support for Naval Ship Hydrocynamic Test Facilities.

	FY 06			

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**4.958**	**2.789**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
9999/Congressional Adds	**4.958**	**2.789**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Project 9999 - See the R2a for descriptions.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY	

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget	5.100	0.000	0.000	0.000
FY 2008/2009 OSD Budget	4.958	2.789	0.000	0.000
Total Adjustments	-0.142	2.789	0.000	0.000
Summary of Adjustments				
SBIR reductions	-0.069	0.000	0.000	0.000
Congressional Program Reductions	-0.051	0.000	0.000	0.000
Sec. 8125: Revised	-0.022	0.000	0.000	0.000
Congressional Adds	0.000	2.800	0.000	0.000
Program Adjustments	0.000	-0.011	0.000	0.000
Subtotal	-0.142	2.789	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603573N/ADVANCED SURFACE MACHINERY SYS	Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS

C. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
9043C/9043	3.302	0.000		
Advanced Combatant Materials Research				

(U) Due to changing operational requirements, ships will require improved stealth, speed, and payload flexibility, which can place additional burdens on ship weight. The Advanced Combatan 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	FY 07	FY 08	FY 09
9819N	1.656	0.000		
LCS Advanced Lightweight Metals Technology				

(U) 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.

	FY 06	FY 07	FY 08	FY 09
9819C	0.000	1.793		
LCS Advanced Lightweight Metals Tech-Aluminum				

(U) The purpose of the add is to address several concerns regarding the use of aluminum alloys for high-speed ship construction. In Navy service experience, aluminum structures have been characterized by extensive cracking due to fatigue, corrosion fatigue, and stress-corrosion cracking that were attributed to poor weld quality, poor weld repair, and sensitization due to the thermal effects of natural aging and welding. Aluminum is more difficult to weld than steel. Aluminum welds exhibit low fatigue properties and high fatigue crack growth rates as compared with steel. Aluminum exhibits a loss of strength at elevated temperatures. Improper selection of aluminum alloys can lead to localized and galvanic corrosion problems. In addition, the LCS design utilizes an aluminum alloys that has no prior Navy experience.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	PROGRAM ELEMENT NUMBER AND NAME 0603573N/ADVANCED SURFACE MACHINERY SYS	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS

C. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
9994C	0.000	0.996		
Lightweight Metals Tech For Aluminum Intensive				

(U) The Lightweight Metals Technology for Aluminum Intensive Marine Structures program will provide an aluminum design methodology that integrates the alloy composition and processing history with design tools to enable ship designers to predict the performance of aluminum structures. This capability is an enabling technology for developing lighter weight structures with improved properties to ensure the performance, reliability, and survivability of new ship designs including LCS Flight 1, LHA(R), and JMAC.

	FY 06	FY 07	FY 08	FY 09

	FY 06	FY 07	FY 08	FY 09

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**			R-1 ITEM NOMENCLATURE 0603581N - Littoral Combat Ship (LCS)					
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY12	FY13
Total PE Cost	**584.077**	**329.383**	**217.502**	**171.146**	**214.867**	**131.610**	**99.528**	**65.180**
3096 - LCS Development	**71.248**	**56.812**	**71.240**	**62.955**	**83.557**	**66.518**	**51.240**	**23.403**
3129 - Mission Package Project	**193.474**	**161.727**	**109.193**	**101.049**	**131.310**	**65.092**	**48.288**	**41.777**
4018 - Littoral Combat Ship Construction	**313.249**	**99.886**	**37.069**	**7.142**	**0.000**	**0.000**	**0.000**	**0.000**
9999 - Undistributed RDT&E & Congressional Add	**6.106**	**10.958**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY07 Pres Controls)	573.957	319.671	187.568	132.776
Current President's Budget (FY08/09 Controls)	584.077	329.383	217.502	171.146
Total Adjustments	10.120	9.712	29.934	38.370
(U) Summary of Adjustments				
Program Adjustments			41.619	46.463
Katrina Supplemental	12.000			
Congressional Adds		11.000		
Congressional Undistributed Adjustments	0.340	-1.288		
Pricing Adjustment			-10.300	-8.000
Undistributed General Adjustments	-0.721		-1.385	-0.093
SBIR	-11.498			
Reprogrammings	9.999			
Total	10.120	9.712	29.934	38.370

Schedule: See Individual Projects. Due to production delays, it has been determined that production work arounds will not be able to fully recover schedule. Therefore, delivery of first ship is now planned for October 2007 vice January 2007

Technical: N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**71.248**	**56.812**	**71.240**	**62.955**	**83.557**	**66.518**	**51.240**	**23.403**
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: procescution 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. Platform development includes platform experimentation and platform and ship system design and integration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	3096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
LCS Program	12.325	14.300	0.000	0.000
RDT&E Articles Quantity				

LCS Program Analysis, Engineering, Integration, & Management:
Continue cost and risk analysis. Held Flight 0 OIPT in October 2005. Begin documentation for Milestone B. Continue requirements and effectiveness analysis for Flight 0.

FY06 - Continue the development of operational context in which LCS will operate. Begin documentation for Milestone B. Continue requirements and effectiveness analysis for LCS.
FY06-07 - Continue cost and risk analysis. Continue risk management planning and implementation.

	FY 06	FY 07	FY 08	FY 09
LCS System-of-Systems Development, Engineering & Experimentation	49.823	29.512	25.632	20.652
RDT&E Articles Quantity				

LCS System-of-Systems Development, Engineering & Experimentation
FY06-FY09: 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. 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	3096 - Littoral Combat Ship Development	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
LCS Total System Training Architecture	0.000	0.000	7.462	6.103
RDT&E Articles Quantity				

LCS Total System Training Architecture

Provide LCS with shipboard embedded training capability to satisfy individual, unit, team and force training both in port and at sea.
Capability would be similar to and build off of DDG 1000 Total Ship Training System efforts and support LCS Train to Qualify requirements

	FY 06	FY 07	FY 08	FY 09
LCS Test & Evaluation	9.100	13.000	28.705	23.000
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)
FY06 - Begin DT assistance. Begin component and system shock testing. Continue modeling and simulation (M&S) and surrogate testing.
FY08-FY09 - Conduct LCS 1 and 2 ship delivery and qualification test and trials. Begin Flight 0 OPEVAL and LFT&E planning

	FY 06	FY 07	FY 08	FY 09
LCS Seaframe T&E Ordnance	0.000	0.000	9.441	13.200
RDT&E Articles Quantity				

LCS Seaframe T&E Ordnance

Update Requirements and Fully Fund T&E Ordnance for testing of each ship

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N- Littoral Combat Ship (LCS)	3096 - LCS Development

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
BLI 1600 (OPN)	36.270	78.741	80.324	270.958	284.502	337.149	377.923	370.795	CONT	CONT
BLI 2127 (SCN)	434.007	518.472	910.482	1767.112	1761.372	1,803.063	1,856.463	1,608.842	5881.900	16541.713
BLI 4221 (WPN)				22.407	33.964	40.397	45.406	10.845	CONT	CONT
BLI 0443 (APN)		37.419	37.687	73.155	73.774	75.979	95.888	102.304	CONT	CONT
BLI 1B5B/15BR0 (OMN)			25.063	25.121	30.144	12.746	12.728	12.712	CONT	CONT
BLI 1B4B/14B50 (OMN)			8.627						CONT	CONT

D. 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.

E. MAJOR PERFORMERS:

General Dynamics - Bath Iron Works
Lockheed Martin

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603581N - Littoral Combat Ship

PROJECT NUMBER AND NAME: 3096 - LCS Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Preliminary Design (Flight 0)	Compet	LM, BIW, RAYTHEON	30.686	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	30.686	30.686
Final Design (Flight 0)	Compet	LM, BIW	133.479	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	133.479	133.479
Mission Sys Dev	Various	Various	135.532	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	135.532	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			299.697	0.000		0.000		0.000		0.000		0.000	299.697	164.165

Remarks:

													0.000	
													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	0.000	0.000

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

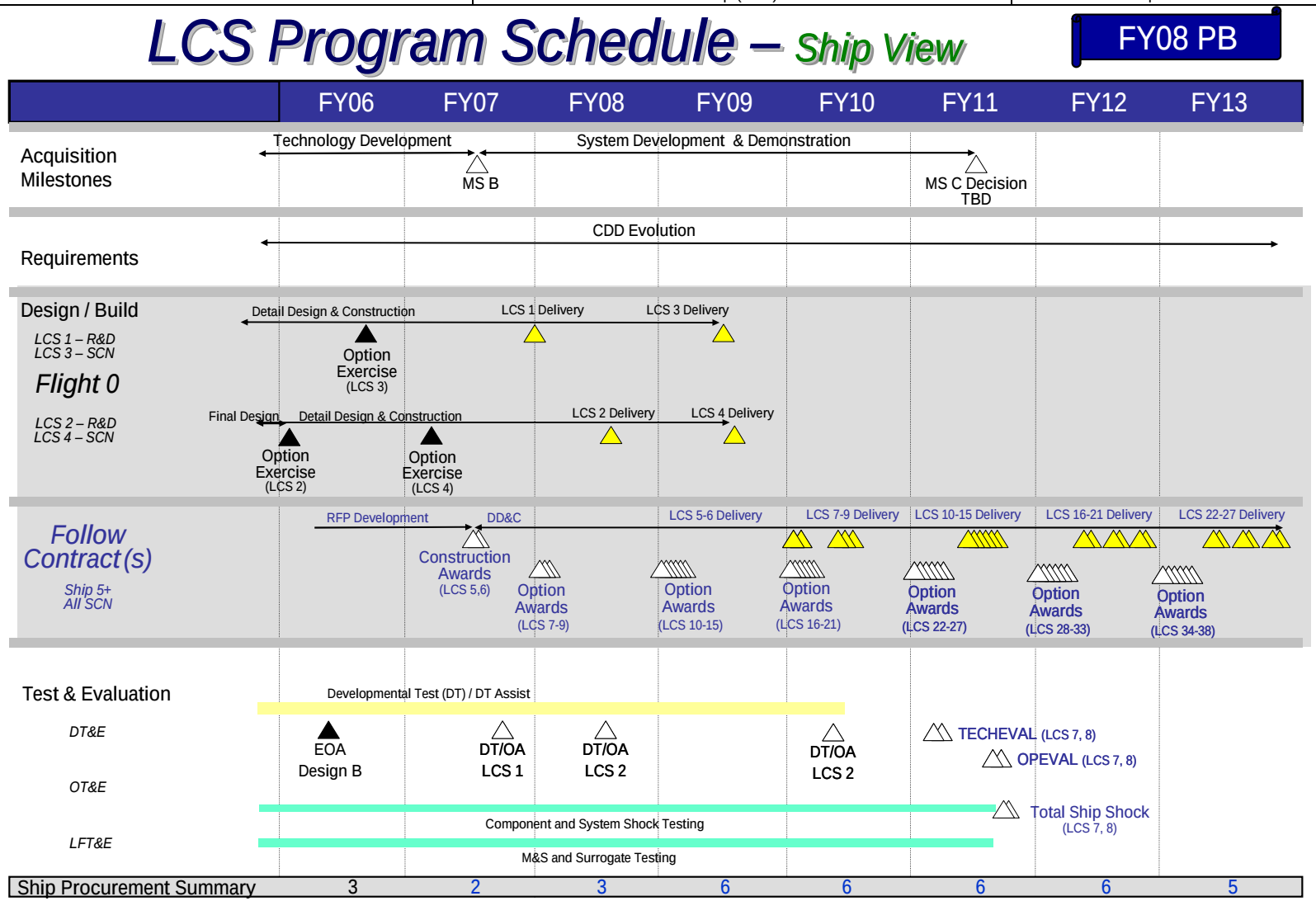
PROGRAM ELEMENT: PE 0603581N - Littoral Combat Ship

PROJECT NUMBER AND NAME: 3096 - LCS Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC/CD Bethesda, MD	4.500	3.000	1QFY06	4.500	1QFY07	6.000	1QFY08	3.000	1QFY09	7.500	28.500	
Developmental Test & Evaluation	WX	NSWC/DD, Dahlgren, VA	3.500	3.000	1QFY06	4.500	1QFY07	6.000	1QFY08	3.000	1QFY09	7.500	27.500	
Developmental Test & Evaluation	Various	Various	6.000	3.100	1QFY06	4.000	1QFY07	8.000	1QFY08	3.000	1QFY09	5.000	29.100	
Flight 0 OPEVAL & LFT&E	WX	Various	0.000	0.000	N/A	0.000	N/A	8.995	1QFY08	14.000	1QFY09	111.000	133.995	
Subtotal T&E			14.000	9.100		13.000		28.995		23.000		131.000	219.095	0.000
Remarks:														
Contractor Engineering Support	Seaport	ALION, Arlington, VA	10.148	9.200	1QFY06	9.800	N/A	0.000	N/A	0.000	N/A	0.000	29.148	19.348
	Seaport	Various	11.957	4.000	1QFY06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	15.957	15.957
	Compet	TBD	0.000	0.000	N/A	0.000	1QFY07	6.800	1QFY08	4.200	1QFY09	CONT	CONT	
Government Engineering Support	WX	NSWC/CD, Bethesda, MD	16.771	12.148	1QFY06	6.500	1QFY07	2.760	1QFY08	2.500	1QFY09	CONT	CONT	
	WX	NSWC/DD, Dahlgren, VA	19.843	5.000	1QFY06	5.745	1QFY07	4.000	1QFY08	4.000	1QFY09	CONT	CONT	
	WX	NSWC/PC, Panama City, FL	12.359	7.500	1QFY06	3.267	1QFY07	3.267	1QFY08	2.500	1QFY09	CONT	CONT	
	WX	NSWC/PHD, Port Hueneme,	2.050	3.500	1QFY06	1.000	1QFY07	1.000	1QFY08	0.750	1QFY09	CONT	CONT	
	Various	Government Activities	7.112	4.000	1QFY06	5.000	1QFY07	1.100	1QFY08	0.365	1QFY09	CONT	CONT	
	WX	NUWC, Newport, RI	6.227	2.000	1QFY06	2.500	1QFY07	2.500	1QFY08	2.153	1QFY09	CONT	CONT	
	WX	SPAWAR, San Diego, CA	7.325	4.000	1QFY06	3.000	1QFY07	1.500	1QFY08	1.500	1QFY09	CONT	CONT	
	WX	NSWC Div Crane	0.625	0.500	1QFY06	0.000	N/A	9.151	1QFY08	13.200	1QFY09	16.600	40.076	
	WX	NAWC AD, Pax River	2.800	4.000	1QFY06	2.000	1QFY07	1.500	1QFY08	1.500	1QFY09	CONT	CONT	
Total System Training Architecture	Contract	LM / GD	0.000	0.000	N/A	0.000	N/A	7.867	1QFY08	6.587	1QFY09	0.000	14.454	
Program Management Support	Various	Various	9.345	5.000	1QFY06	4.000	1QFY07	0.000	1QFY08	0.000	1QFY09	CONT	CONT	
Labor (Research Personnel)	CPFF	APL/JHU Laurel MD	1.132	1.000	1QFY06	0.500	1QFY07	0.300	1QFY08	0.300	1QFY09	CONT	CONT	
Travel	Various	NAVSEA	0.281	0.300	1QFY06	0.500	1QFY07	0.500	1QFY08	0.400	1QFY09	CONT	CONT	
Subtotal Management			107.975	62.148		43.812		42.245		39.955		CONT	CONT	35.305
Remarks:														
Total Cost			421.672	71.248		56.812		71.240		62.955		CONT	CONT	199.470
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 3096 - LCS Development			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Detail Design and Construction (Flight 0)	1Q-4Q	1Q-4Q	1Q					
Mission System Development & Platform Exp	1Q-4Q	1Q-4Q						
Construction - SCN Funded	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Milestone B		2Q						
Milestone C						2Q		
Ship 1 Delivery (Flight 0) - RDT&E Funded			1Q					
Ship 2 Delivery (Flight 0) - RDT&E Funded			3Q					
Ship 3 Delivery - SCN Funded				3Q				
Ship 4 Delivery - SCN Funded				3Q				
NOTE:								
Developmental Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	2Q-3Q			
Operational Testing	2Q	3Q-4Q	1Q-4Q	1Q-2Q	2Q-4Q	1Q-4Q		
Shock Planning / Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**193.474**	**161.727**	**109.193**	**101.049**	**131.310**	**65.092**	**48.288**	**41.777**
RDT&E Articles Qty	**3**	**1**						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Program provides 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.

Common Vehicles development will provide the capability of an single Unmanned Surface Vehicle (USV) - 11m RIHB and Remote Minehunting Vehicle (RMV) for the MIW & ASW Mission Packages.

Advanced Communications Package (ACP) provides Over The Horizon (OTH) Data Relay Capability to enable LCS to operate off-board sensors (ISR, MIW, SUW, USW) at significantly extended ranges. This project provides funds for the design and development of ACP prototype and engineering development model (EDM) systems, integration with LCS/Vertical Take-Off and Landing Unmanned Aerial Vehicle (VTUAV) and DT/OT.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	3129 - LCS Mission Package Development

B. Accomplishments/Planned Program

MIW Mission Module Package	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	43.758	24.716	4.124	0.000
RDT&E Articles Quantity				

FY06: Integration of Cobra with Fire Scout VTUAV & LCS; Modifications to Remote Minehunting System (RMS) (cradle design, capture spire, launch & recovery); Development of ILS training plans for MIW mission package on LCS. Unmanned Surface Vehicle (USV) integration, Mission Module design, test, and fabrication; MIW MP Integration with LCS and certification, modeling and simulation in support of module design; Technical manual and other related ILS documentation development ($43.758).
FY07: Continuation of mission module testing, integration & certification; Mission module fabrication for Mission Package #2; Human Systems Integration (HSI); ILS documentation development and updates; Mission Package training; Modeling & Simulation; and RMS installation on LCS ($24.716).
FY08: Continue mission module integration ($4.124).

ASW Mission Module Package	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	80.109	36.446	12.831	0.000
RDT&E Articles Quantity	2			

FY06: Continuation of the development, integration, and testing of USV bi-static mission module which includes Ultralight Towed Array Sonar (UTAS) and Multi-Static Offboard System (MSOBS) mission systems; Continuation of the development, integration, and testing of the Remote Towed Array (RTA) & Remote Towed Array Source (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 ($80.109).
FY07: Continuation of the development, integration, and testing of USV bi-static mission module includes UTAS and MSOBS mission systems; Continue 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 ($36.446).
FY08: Techical Design Agent (TDA) efforts (system eng, H/W, S/W, integration, HSI, environmental & safety, ILS) of ASW Modules ($12.831)

SUW Mission Modules Package	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	38.423	47.806	32.716	18.032
RDT&E Articles Quantity	1	1		

FY06: Perform design, development, test, evaluation, integration, and certification with Non Line of Sight Launching System (NLOS-LS) and 30 MM gun module systems; Conduct the development & design of the SUW Command & Control (C2) system; Coordinate with the MH-60 and VTUAV systems to support SUW Package; Mission Package Integration (MPI) efforts ($29.423); Procure 1 NLOS-LS and 1 Med Cal Gun module ($9.000).
FY07: Conduct certification efforts; Final safety approach; Develop training/maintenance manuals; Provide Package prototype HW/SW to support certification efforts; continue Mission Package development and test evaluation ($28.184); Procure one (1) SUW package ($9.180); Procure NLOS-LS Missiles for testing and Shipfill ($10.442).
FY08:Procure NLOS-LS Missiles for testing and shipfill ($9.959); Procure NLOS-LS ($3.641); Continue the SUW Mission Packages development, intregration, and testing efforts ($19.116).
FY09:Procure NLOS-LS Missiles for testing ($9.978); Continuation of the SUW Mission Packages development, intregration, and testing efforts ($8.054).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	3129 - LCS Mission Package Development	

B. Accomplishments/Planned Program

Common Mission Module Development	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	29.784	45.920	51.504	59.130
RDT&E Articles Quantity				

FY06: Complete C2 build 1 for MIW integration; Acquire Mission Package Computing Environment (MPCE) 1 & 2 and ILS plan; Flight 0 interface Mod Dev/Integration; Fund transition of Joint Advanced Concept Technology Demonstration program; USV program development initiatives; and MPI efforts (develop the Mission Package Spiral Development Plan, assessment of support readiness maturity of all elements of Spiral Alpha, including review of support planning, support concepts, plans for support, availability and adequacy of support data and documentation, existence of plans for Performance Based Logistics (PBL)).

FY07: Installation of the MPCE build 1 to ship; Complete C2 build 1.1 for MIW; Fire Scout integration and Rehosting Fire Scout TCS S/W in LCS; Continue Mission Package Integration efforts (MIW, ASW, SUW, C2); Common Vehicle (USV & RMV) systems development, integration and demonstration, common interface control documentation, Initiate development of Common Command and Control, fund Technology Transition Initiative (TTI) for USV development in support of Common Vehicles program.

FY08: Mission Package Computing Environment (MPCE) - Development, integration, & testing to support the H/W for Mission Packages ASW, MIW, and SUW; Mission Package Integration and Certification, Equipment and Research. USV development; integration of Common Command and Control, and techical support for system test and evaluation.

FY09: Continue USV development, Common Command and Control integration, and techical support for system test and evaluation; Continue MPCE development supporting HW for Mission Packages; Continue Fire Scout integration and Rehosting Fire Scout TCS S/W in LCS.

Airborne Communication Package	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.400	6.839	8.018	23.887
RDT&E Articles Quantity				10

FY 06 Accomplishments [NAVSEA]: Commenced development of ACP acquisition documentation required for Milestone (MS) B Decision.
FY 07 Plan: Award 12 - 14 study contracts to support the development of performance specifications for the ACP development contract. Prepare program specifications, requirements and documentation including contract request for proposal (RFP), statement of work, CDRLs and systems requirements documents. Complete and obtain approval of ACP acquisition documentation for MS B decision.
FY 08 Plan: Achieve MS B Decision. Award ACP development contracts to two vendors for the design, development, integration and demonstration. Design first ACP Engineering Design Model (EDM) System. Conduct Critical Design Review (CDR).
FY 09 Plan: Commence development, integration and demonstration of ACP EDM Build 1 Systems including four shipboard interface units and six airborne data relay packages. Conduct Design Readiness Review. Commence design, development and integration of ACP EDM Build 2 Systems with LCS/VTUAV.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N- Littoral Combat Ship (LCS)	3129 - LCS Mission Package Development

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
BLI 1600 (OPN)	36.270	78.741	80.324	270.958	284.502	337.149	377.923	370.795	CONT	CONT
BLI 2127 (SCN)	434.007	518.472	910.482	1767.112	1761.372	1,803.063	1,856.463	1,608.842	5881.900	16541.713
BLI 4221 (WPN)				22.407	33.964	40.397	45.406	10.845	CONT	CONT
BLI 0443 (APN)		37.419	37.687	73.155	73.774	75.979	95.888	102.304	CONT	CONT
BLI 1B5B/15BR0 (OMN)			25.063	25.121	30.144	12.746	12.728	12.712	CONT	CONT
BLI 1B4B/14B50 (OMN)			8.627						CONT	CONT

D. 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.

(U) ACP - A competitive contract will be awarded to two vendors for the design, development, integration and demonstration of the Advanced Communications Package. There will be a down select to one vendor for the production phase.

E. MAJOR PERFORMERS:

N/A

ACP - TBD

G. PERFORMANCE METRICS:

ACP - Earned value management will be used for metrics reporting and risk management.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MIW Mission Module Development, integration, Modularization	WX	Various	41.358	10/05	24.716	10/06	4.124	10/07	0.000	N/A	0.000	70.198	
Equipment and Hardware													
- BPAUV	CPAF	Bluefin, MA	2.400	02/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.400	2.400
Subtotal Product Development			43.758		24.716		4.124		0.000		0.000	72.598	2.400

Remarks:

			0.000		0.000		0.000		0.000		0.000	0.000	0.000

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603581N - Littoral Combat Ship

PROJECT NUMBER AND NAME: 3129 - LCS Mission Package Development - ASW

Cost Categories	Contract Method & Type	Performing Activity & Location	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ASW Mission Module Development													
integration and Modulariztion	WX	Various	34.441	02/06	32.196	02/06	12.381	10/07	0.000	N/A	Continuing	Continuing	
Equipment and Hardware													
- USV (11m RHIB)	RX/WX	SSC - SD	9.310	03/06-08/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	9.310	
- Underwater Dipping Sonar (UDS)	RX/WX	NUWC Newport	6.851	03/06-08/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	6.851	
- Multistatic Onboard Sonar	RX/WX	SSC - SD	4.627	03/06-08/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	4.627	
- UTAS	RX/WX	SSC - SD	14.581	05/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	14.581	
- RTAS	FP	LMC, NY	5.246	03/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	5.246	5.246
- MFTA	OMNIBUS	JHU/APL MD	5.052	05/06	0.000	N/A	0.000	N/A	0.000	N/A	0.000	5.052	5.052
- Sea Talon	RX/WX	NUWC Newport	0.000	N/A	4.250	11/06	0.450	10/07	0.000	N/A	0.000	4.700	
Subtotal Product Development			80.109		36.446		12.831		0.000		Continuing	Continuing	10.298

Remarks:

Subtotal Support			0.000		0.000		0.000		0.000		0.000	0.000	0.000

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE 0603581N - Littoral Combat Ship

PROJECT NUMBER AND NAME: 3129 - LCS Mission Package Development - SUW

Cost Categories	Contract Method & Type	Performing Activity & Location	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUW Mission Module Development													
Integration and Modularization	WX	Various	30.723	10/05-05/06	25.284	10/06	16.116	10/07	4.929	10/08	Continuing	Continuing	
Equipment and Hardawre													
- NLOS-LS (NetFires)	FFP	Raytheon, AZ	0.000	06/06	3.570	12/06	3.641	N/A	0.000	N/A	0.000	3.570	7.070
- Med Cal Gun Module	FFP	ATK, MD	5.500	06/06	5.610	12/06	0.000	N/A	0.000	N/A	0.000	11.110	11.110
- NLOS (Netfires) Missiles for Shipfill &Testing	FFP	Raytheon, AZ	0.000	N/A	10.442	12/06	9.959	12/07	9.978	12/08	Continuing	Continuing	
Subtotal Product Development			36.223		44.906		29.716		14.907		Continuing	Continuing	18.180

Remarks:

T&E	WX	Various	2.200	02/06	2.900	10/06	3.000	10/07	3.125	10/08	Continuing	Continuing	
Subtotal Product Development			2.200		2.900		3.000		3.125		Continuing	Continuing	0.000

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: February 2007

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

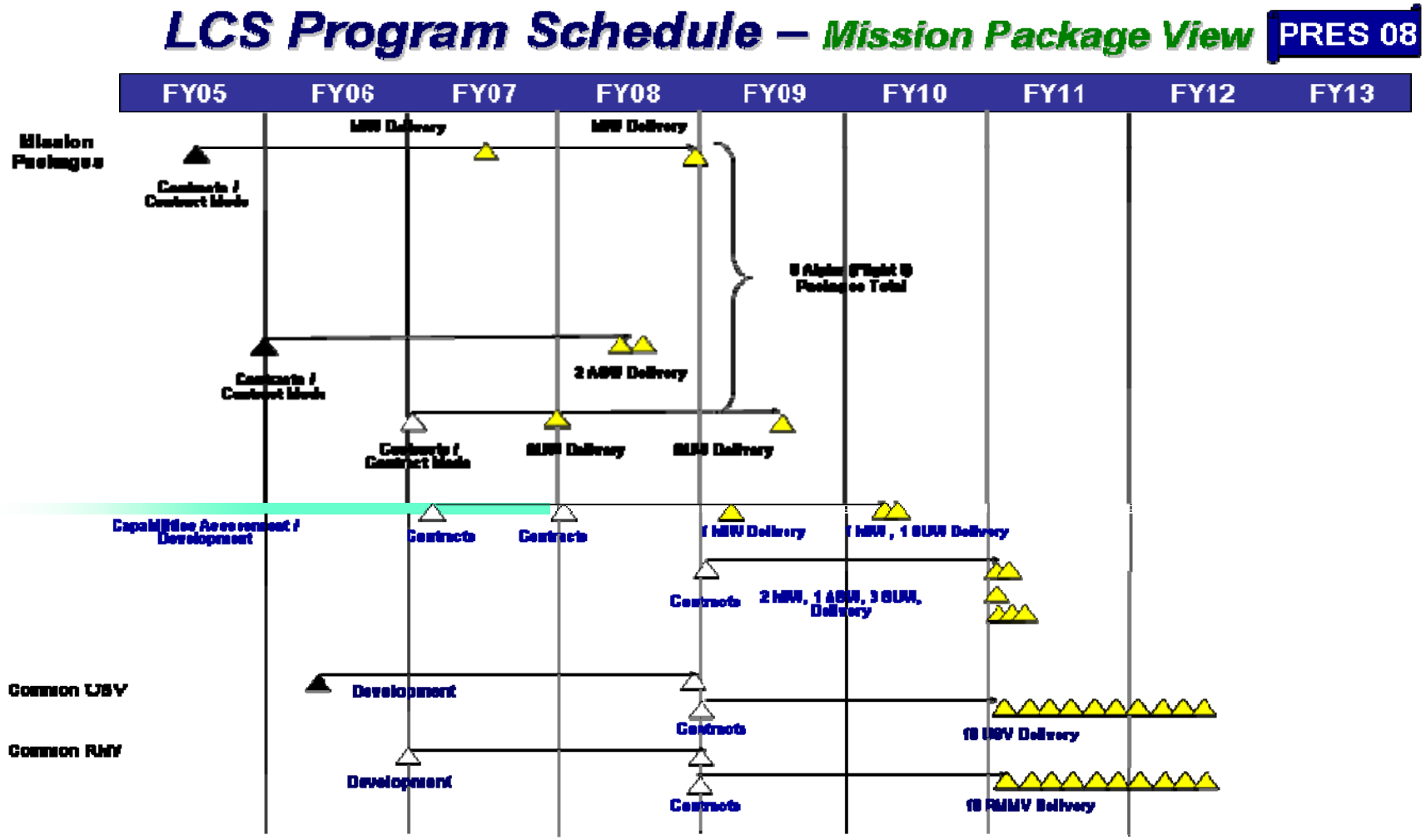
PROGRAM ELEMENT: PE 0603581N - Littoral Combat Ship

PROJECT NUMBER AND NAME: 3129 - LCS Mission Package Development - Common

Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Common Module Development													
and integration													
- FIRESCOUT (Integration & TCS S/W)	Various	Various	0.688	02/06	6.257	10/06	10.742	10/07	10.912	10/08	Continuing	Continuing	
- Common Vehicles (RMVs & USVs)	Various	Various	9.604	02/06	14.767	10/06	18.988	10/07	27.057	10/08	Continuing	Continuing	
- ACP Design, Dev & Integration	CPFF/ CPIF	TBD			2.000	02/07	4.507	11/07	19.137	11/08	TBD	TBD	TBD
- ACP Acquisition/PM Support	CPFF	BAH, McLean, VA	1.200	11/05									
- ACP Engineering Support	WX	Various	0.200	11/05	0.584	Various	0.711	Various	1.975	Various	Continuing	Continuing	
- ACP Acquisition/PM Support	CPAF	SeaPort/TBD	0.000	N/A	4.255	02/07	2.800	11/07	2.648	11/08	Continuing	Continuing	
- ACP Test & Evaluation	Various	Various	0.000	N/A	0.000	N/A	0.000	N/A	0.127	Various	Continuing	Continuing	
Subtotal ACP			1.400		6.839		8.018		23.887				
- MPCE	Various	Various	1.300	10/05-02/06	1.214	10/06	1.229	10/07	1.200	10/08	Continuing	Continuing	
- Common C2	Various	Various	9.705	10/05-02/06	10.408	10/06	6.481	10/07	0.000	N/A	Continuing	Continuing	
Modular Development	CPAF	Northrop Grumman-Bethpage, N	4.034	01/06	8.914	11/06	9.777	11/07	16.612	11/08	Continuing	Continuing	
Subtotal Development & Integration			26.731		48.399		55.235		79.668		Continuing	Continuing	0.000
Remarks:													
Program Management Support	Various	Various	1.893	10/05	1.900	10/06	1.947	10/07	0.954	10/08	Continuing	Continuing	
Travel Support	PD	NAVSEA	0.070	10/05	0.060	10/06	0.065	10/07	0.070	10/08	Continuing	Continuing	
ILS, C4I and Aviation Rep Support	Various	Various	2.490	10/06	2.400	10/06	2.275	10/07	2.325	10/08	Continuing	Continuing	
Subtotal Management			4.453		4.360		4.287		3.349		Continuing	Continuing	0.000
Remarks:													
Mission Package Total Cost			193.474		161.727		109.193		101.049		Continuing	Continuing	30.878
Remarks:													

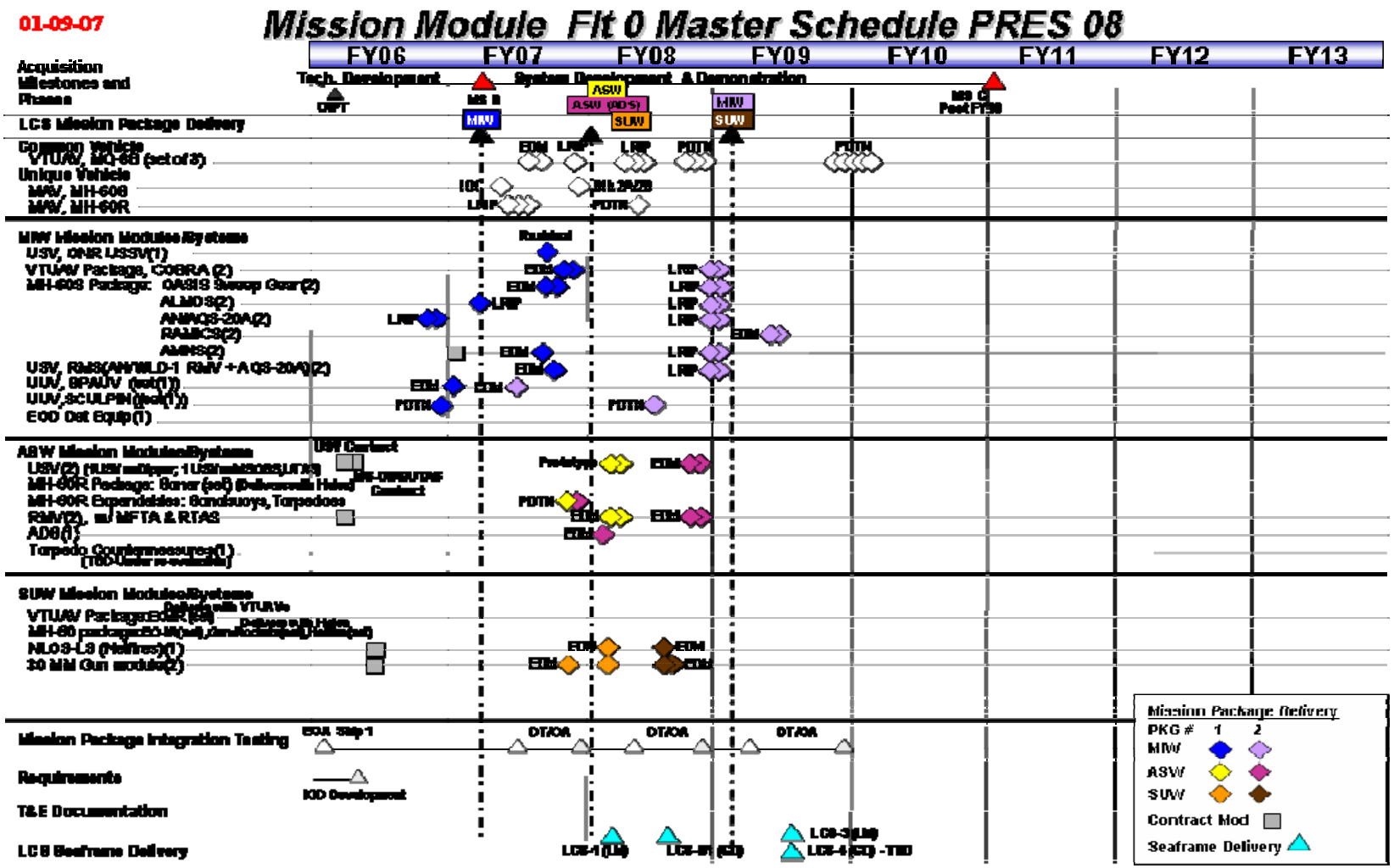
CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship (LCS)	3129 - LCS Mission Package Development



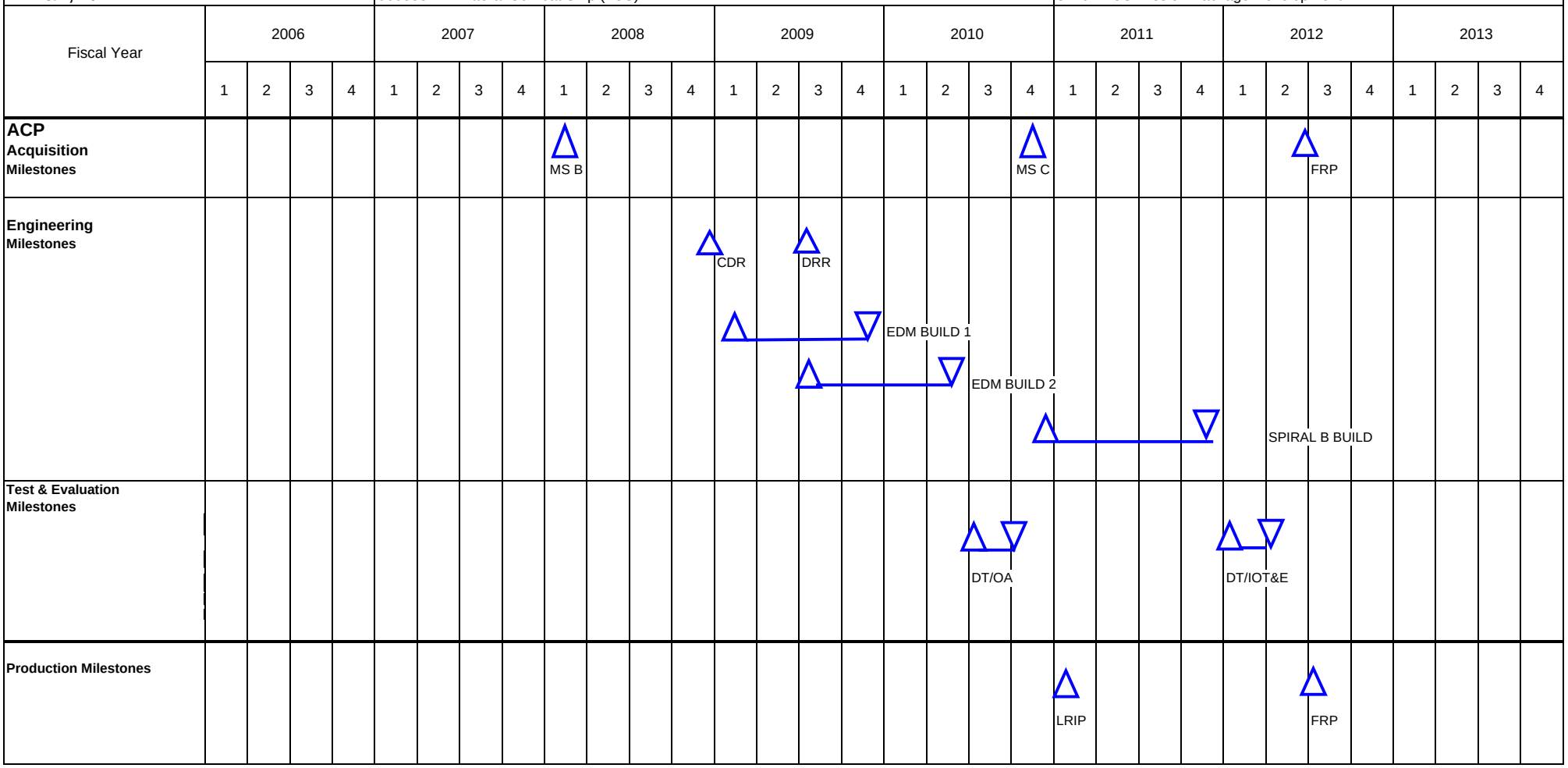
CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship (LCS)	3129 - LCS Mission Package Development



CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/ BA-4**	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship (LCS)				PROJECT NUMBER AND NAME 3129 - LCS Mission Package Development			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Achieve MS B			1Q					
Conduct CDR			4Q					
Commence EDM Build 1				1Q				
Conduct DRR				3Q				
Commence EDM Build 2				3Q				
Complete EDM Build 1				4Q				
Complete EDM Build 2					2Q			
Commence DT/OA					3Q			
Achieve MS C					4Q			
Commence Spiral B Build					4Q			
Complete DT/OA					4Q			
Award LRIP Contract						1Q		
Complete Spiral B Build						4Q		
Commence DT/IOT&E							1Q	
Complete DT/IOT&E							2Q	
Achieve FRP							2Q	
Award FRP Contract							3Q	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**313.249**	**99.886**	**37.069**	**7.142**	**0.000**	**0.000**	**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 of the LCS Flight 0 ships, LCS 1 funded in FY05 and LCS 2 Funded in FY06. This project also funds Outfitting & Post Delivery. Breakout of RDT&E ship end cost are shown below.

	LCS 1	LCS 2*
Basic Construction ($M)	270,864	275,340
Change Orders ($M)	5,000	10,000
Other (ILS, Sys Eng., Test/Trials) ($M)	5,000	5,000
Other GFE ($M)	12,476	7,139
	293,340	297,479

***Basic Construction includes $30M for Naval Vessel Rules and MSSIT changes**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	PE 0603581N - Littoral Combat Ship (LCS)	4018 - Littoral Combat Ship Construction

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	304.543	63.527	0.000	0.000
RDT&E Articles Quantity				

FY06 - FY07 Detail design and construction funding for Lockheed Martin LCS 1.
FY06 - FY07 Detail design and construction funding for General Dynamics LCS 2.
FY06 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.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.706	36.359	37.069	7.142
RDT&E Articles Quantity				

FY06 - LCS 1Outfitting funding is required for spare parts, medical and dental supplies, pre-commission crew support, and crew move aboard.
FY07-FY09 - LCS 1/2 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship (LCS)	4018 - Littoral Combat Ship Construction

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
BLI 1600 (OPN)	36.270	78.741	80.324	270.958	284.502	337.149	377.923	370.795	CONT	CONT
BLI 2127 (SCN)	434.007	518.472	910.482	1767.112	1761.372	1,803.063	1,856.463	1,608.842	5881.900	16541.713
BLI 4221 (WPN)				22.407	33.964	40.397	45.406	10.845	CONT	CONT
BLI 0443 (APN)		37.419	37.687	73.155	73.774	75.979	95.888	102.304	CONT	CONT
BLI 1B5B/15BR0 (OMN)			25.063	25.121	30.144	12.746	12.728	12.712	CONT	CONT
BLI 1B4B/14B50 (OMN)			8.627						CONT	CONT

D. 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.

E. MAJOR PERFORMERS:

General Dynamics - Bath Iron Works
Lockheed Martin

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
LCS Ship 1 Construction	Comp	Lockheed Martin	206.749	78.064	1QFY06	8.527	1QFY07	0.000	N/A	0.000	N/A	0.000	293.340	293.340
Long Lead Material LCS Ship 2	Comp	General Dynamics	16.000	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	16.000	16.000
LCS Ship 2 Construction	Comp	General Dynamics	0.000	226.479	1QFY06	55.000	1QFY07	0.000	N/A	0.000	N/A	0.000	281.479	281.479
Subtotal Product Development			222.749	304.543		63.527		0.000		0.000		0.000	590.819	590.819

Remarks:

Initial Outfitting	MP	DCMA	0.000	7.506	4QFY06	12.076	2QFY07	5.646	1QFY08		1QFY09	0.000	25.228	89.276
Testing	WX	Naval Surface Warfare Cntr.		1.200		9.000		21.850						
Post Delivery ECPs	Comp	LM / GD				14.283								
PSA/PSA Planning	WX	Supship (Various)				1.000		9.573		7.142				
			0.000	8.706		36.359		37.069		7.142		0.000	89.276	89.276

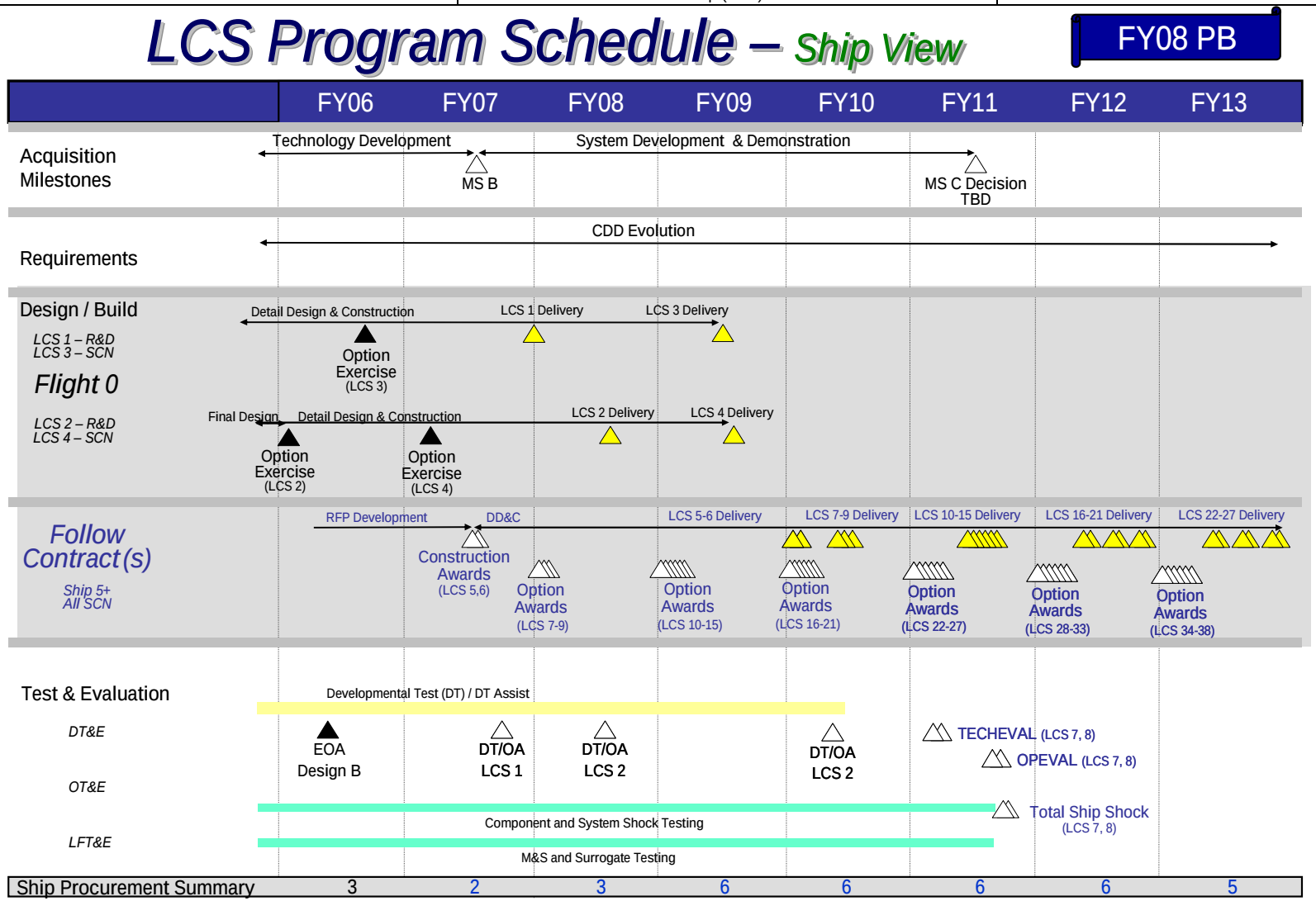
Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)													DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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			222.749	313.249		99.886		37.069		7.142		0.000	680.095	680.095
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 4018 - LCS Construction			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Detail Design and Construction (Flight 0)	1Q-4Q	1Q-4Q	1Q					
Mission System Development & Platform Exp	1Q-4Q	1Q-4Q						
Construction - SCN Funded	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Milestone B		2Q						
Milestone C						2Q		
Ship 1 Delivery (Flight 0) - RDT&E Funded			1Q					
Ship 2 Delivery (Flight 0) - RDT&E Funded			3Q					
Ship 3 Delivery - SCN Funded				3Q				
Ship 4 Delivery - SCN Funded				3Q				
NOTE:								
Developmental Testing	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	2Q-3Q			
Operational Testing	2Q	3Q	4Q		2Q-4Q			
Shock Planning / Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship	9999-Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07		
9820N				
ASW Multistatic Sensor Mission Planning Upgrade	0.985	0.000		

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. This funding is for mission planning for Low Frequency Bi-static/multi-static Systems deployed from USVs in support of the LCS ASW MP. 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	FY07		
9821N/C				
Remote Operation of Active Sonar Technology	2.953	0.996		

Funding is for efforts to 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 in support of the ASW Mission Package.

	FY 06	FY07		
9822N/C				
Unmanned Surface Vehicle Concepts & Technology	2.168	2.192		

Initiated common USV program transition, concept development, and integration for LCS. This concept focused 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 provided:

- 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship	9999-Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07		
9995N				
Advanced Lightweight Metals Tech for Aluminum Intensive Marine Structures	0.000	1.195		

Advanced Lightweight Metals Technology for Aluminum Intensive Marine Structures program provides research, development, testing and evaluation of new, advanced aluminum alloys and processing technologies for use in the design of lighter weight structures for the LCS Flight 1, LHA(R), JMAC and other high speed, shallow draft ships and craft.

	FY 06	FY07		
9996N				
LCS ASW Mission Area Commonality	0.000	2.291		

Conduct coordinated "build-test-build" testing for LCS surface combatants and embarked off-board platforms, demonstrate an accelerated path towards enhanced joint net-centric operational ASW effectiveness.

	FY 06	FY07		
9997N				
LCS Mission Module Enhanced Tactical Response	0.000	4.284		

Funding to extend depth of program of record derivation and select non program of record risk mitigation efforts to: Field a Continuous Active Sonar (CAS) capable integrated ASW USV threat redetection, localization and engagement capability; Develop a common USV sensor launch & recovery system; Establish the LCS ASW Operations Support Center to provide end-user responsive “pier side” operator training refresh, reachback mission planning and prosecution support; Adapt netted distributed sensor grid communication protocols and data sharing methods for off board sensor systems real time situational awareness; Enable Mission Module USV increased bandwidth communications connectivity, and advanced autonomous data fusion and contact management

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**$74.626**	**$64.088**	**$53.427**	**$53.435**	**$39.139**	**$38.621**	**$38.120**	**$37.621**
0164/Combat Systems Integ/Strike Force Interoperability	**$73.640**	**$61.797**	**$53.427**	**$53.435**	**$39.139**	**$38.621**	**$38.120**	**$37.621**
9999 / Congressional Adds	**$0.986**	**$2.291**	**$0.000**	**$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 Warfare Systems Certification Policy (NWSCP), Joint NAVSEA, NAVAIR, and SPAWAR SYSCOM Instruction.

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 which are a prerequisite for operational Certification of the ships in Strike Force configurations prior to deployment. Force Certification of deploying ships in 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 Certification testing in the DEP prior to deployment. Further, the DEP provides the mechanism to support the Navy's participation in the Joint testing environments (JDEP/JMETC) as well as the coalition forces through the Combined Forces Battle Laboratories (CFBL) network to allow for assessments of both Joint and Coalition interoperability.

Through the implementation of the Fleet Response Plan (FRP), the Navy has made considerable improvements in Naval Force Interoperability. As the Navy embarks on Navy Open Architecture (OA), Common Network Interface (CNI) has been selected for CDS upgrade on the LHA/LHD ship class. Engineering efforts initiated via direction from OSD in FY04/05. The program's development includes a land based demonstration scheduled in April 2005 and an at-sea demonstration scheduled for January 07. Production commences in FY07 with installation spirals planned in FY08 for the LHA and LHD Class ships. Future software and hardware modifications are planned for FY07 and out. CNI is a Commercial Off The Shelf (COTS) open interface system transitioning to an upgrade that modernizes Combat Systems on legacy amphibious ships, LHA/LHD classes, which will support the Expeditionary Strike Group (ESG). CNI upgrades the existing system using COTS hardware and common interoperable software compliant with the Navy's Open Architecture standards to integrate the data from ship's sensors, external links, and FORCEnet sources into an operational picture for the war fighter and an out put to the legacy ACDS weapons control system. CNI provides rapid operational capability upgrades via an Rapid Capability Insertion Process (RCIP) using primarily software upgrades, an integrated Air, Surface, ISR, and friendly shore position and situational awareness track picture. CNI will allow for the implementation of the Joint Track Manager and FORCEnet and Network centric connectivity.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**$74.626**	**$64.088**	**$53.427**	**$53.435**	**$39.139**	**$38.621**	**$38.120**	**$37.621**

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY2009
FY07 Pres Budget:	92.310	62.095	52.173	50.846
FY08 Pres Budget:	74.626	64.088	53.427	53.435
Total Adjustments	-17.684	1.993	1.254	2.589

Summary of Adjustments

Other General Provisions	-1.184			
Congressional Undistributed Reductions		-0.298		
Realign Congressional adds	-16.500			
Undistributed General Reductions			0.116	0.568
Program Adjustment			1.138	2.021
Congressional Plus Up		2.291		
Subtotal	-17.684	1.993	1.254	2.589

Schedule: See R4/R4A Schedule.

Technical:

Funds certification of platform/strike force interoperability in accordance with CFFC direction (meets 75% of deploying force requirements.)

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164 CSI/SFI

B. Accomplishments/Planned Program

SF Requirements Engineering and Analysis	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.561	2.886	3.000	2.949
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

In FY06 and FY07, the program will develop multi-mission strike scenarios and evaluate interoperability performance. Development of these standards will be essential to the evaluation of emerging combat system capabilities, such as Open Architecture, CVN 77, CVN 21, and LCS. Continue developing data sets that can be used to apply quantifiable and measurable Strike Force I/O reqs. In FY 08 and FY 09, the program will implement the above mentioned multi-mission scenarios and interoperability test requirements, evaluate interoperability performance, and advise the Fleet of critical interoperability capabilities and limitations. Implementation of these standards are essential to evaluate emerging combat system capabilities, such as Open Architecture baselines in CG/DDG modernization, LCS, CVN 77, DDG 1000, and CVN 21. Continue developing data sets that can be used to apply quantifiable and measurable Strike Force I/O reqts.

FRP	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.441	5.204	7.518	8.374
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

In FY 06 and FY07, plans are to continue implementing the Fleet Response Plan (FRP) by providing support from the Strike Force Interoperability Teams which include On-Site-Reps, Project Engineers, Fleet Liaisons, Strike Force Interoperability Officers and support the FRP milestones relating to Command Control Communication Computer and Combat Systems Modernization Process (C5IMP). In FY08 and beyond, 25 + Strike Groups are being evaluated in some phase of the Fleet Response Plan (FRP). Continue development and distribution of Strike Group Capabilities and Limitations documentation for each Strike Force identified in the FRP process deployment cycle. This will include support to meet Emergency Surge, Surge, and Normal Deployment, and include limited CSCS training events with updated material from documented findings/results of underway and I/O Certification test events. Over 27 Capabilities and Limitations documents will be delivered, and over 12,000 configuration change requests will be processed.

Combat Systems Cert iso Platform Certification	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	9.092	7.307	4.660	5.334
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

In FY06 and FY07, 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. FY08-FY13 continue planning for out-year testing to include CVN 77, LCS, LPD 17, CVN 21, Open Architecture combat systems as well as integration of new combat system capabilities.

Platform/Strike Force Certification	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	11.200	10.496	15.552	15.490
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

In FY06, conducted DEP testing and data analysis of complex computer program configurations necessary to characterize ships' contribution to Strike Force Interoperability in support of Platform Certification Decisions. Conducted Systems Engineering events for root-cause determination of key interoperability problems and in support of development of new force-level warfare system capability. Strike Force and Platform Interoperability of deploying forces: Conducted Advanced Platform Interoperability tests for AWS 7.1.1.1, AWS 6.1.7, CVN 68 and LHA 4. Conducted Basic Platform Interoperability Tests for CVN 68 and LHA 4. In FY07, three similar events are planned to support LHD 2/4/5/7 and CVN 76/79, while also evolving the testing method to Interoperability Development testing for CVN 68 and CVN 77/70. Interoperability Development and Interoperability Certification test events are also planned in FY08 and beyond. Interoperability Developmental Testing, and Interoperability Certification Testing for FY 08 and FY 09 deployers.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E,N/BA-4	0603582N CSI/SFI	0164 CSI/SFI	

B. Accomplishments/Planned Program (Cont.)

DEP Engineering and Operations	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.115	5.638	7.807	7.396
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Performs systems engineering, and operations functions to ensure DEP infrastructure supports testing of combat system baselines. 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 FY06, the NUWC Newport SAIL, and CSEDS were added to the DEP network. In FY07-FY09 projected nodes include SSC Charleston in support of OA testing and CVN 21 Joint and Coalition events will be supported through FY07.

Interoperability Fixes	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.976	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	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. 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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	4.600	4.960	0.000	0.000
RDT&E Articles Quantity	N/A	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. FY06 events included Enhanced Link 16 Coalition Networking, Correlation/Decorrelation Interoperability Test and Joint Combined Hardware in the Loop Phase 3 (JCHE 3). FY07 event proposals include JCHE Phase 4, Joint player participation in core Navy DEP certification event, and Joint OA experiments.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/SFI	PROJECT NUMBER AND NAME 0164 CSI/SFI

B. Accomplishments/Planned Program (Cont.)

CNI/OA Transformation Roadmap	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	23.155	25.306	14.890	13.892
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

In FY2006, began 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 interoperability requirements.

OA Automated Test and Re-Test	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.500	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E,N/BA-4	0603582N CSI/SFI	0164 CSI/SFI	

C. 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)
PE 0604307N (AEGIS Combat Systems Engineering)
PE 0604755N (Ship Self Defense - EMD)
PE 0604518N (Combat Information Center Conversion)
PE 0603879N (Single Integrated Air Picture (SIAP) System Engineering (SE)

Related Procurement:
OPN 296000 (ICSTF/DEP: Integrated Combat System Test Facilities/Distributed Engineering Plant)

FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
$4.3	$4.3	$4.5	$4.6	$4.7	$4.9	$5.0	$5.1

D. ACQUISITION STRATEGY: Not Applicable

E. MAJOR PERFORMERS:

Naval Surface Warfare Center - Distributed Engineering Plant (DEP), Strike Force Interoperability Requirements (SFIR) and Platform/Strike Force Certification efforts.
General Dynamics - Advanced Information Systems (GD-AIS) Digital Systems Resources, Inc. (DSR), Fair Lakes, VA- Prime contractor for Common Network Interface (CNI).

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROJECT NUMBER AND NAME
0603582N CSI/SFI

Cost Categories	Contract Method & Type	Performing Activity & Location	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SF Requirements Engineering & Analysis	WR/RC	NSWC	0.757	10/05	1.027	10/06	1.075		1.306		CONT.	CONT.	
SF Requirements Engineering & Analysis	WR/RC	VARIOUS	1.432	10/05	1.859	10/06	1.500	10/07	1.300	10/08	CONT.	CONT.	
FRP	WR/RC	NSWC PHD	2.892	10/05	3.266	10/06	5.176	10/07	4.949	10/08	CONT.	CONT.	
FRP	WR/RC	NSWC DD	2.092	10/05	1.938	10/06	1.943	10/07	1.943	10/08	CONT.	CONT.	
FRP	WR/RC/PD	VARIOUS	0.000		0.000		0.000		0.000		CONT.	CONT.	
Combat Systems Cert iso Platform Cert	WR/RC	NSWC PHD	6.784	10/05	6.174	10/06	3.710	10/07	3.910	10/08	CONT.	CONT.	
Combat Systems Cert iso Platform Cert	WR/RC	VARIOUS	1.666	10/05	2.130	10/06	0.950	10/07	1.568	10/08	CONT.	CONT.	
Platform/Strike Force Cert	WR/RC	NSWC DD	10.200	10/05	4.144	10/06	4.460	10/07	4.460	10/08	CONT.	CONT.	
Platform/Strike Force Cert	WR/RC/PD	VARIOUS	0.000		3.314	10/06	8.950	10/07	9.250	10/08	CONT.	CONT.	
DEP Engineering and Operations	WR/RC	NSWC DD	6.141	10/05	5.368	10/06					CONT.	CONT.	
DEP Engineering and Operations	WR/RC/PD	VARIOUS	0.000		0.000		6.507	10/07	6.507	10/08	CONT.	CONT.	
Interoperability Fixes	WR/RC	NSWC DD	1.500	10/05	0.000		0.000		0.000		CONT.	CONT.	
Interoperability Fixes	WR/RC	NSWC DD-CDSA DN	0.000		0.000		0.000		0.000		CONT.	CONT.	
JDEP	WR/RC	NSWC DD	3.295	10/05	3.290	10/06	0.000	10/07	0.000	10/08	CONT.	CONT.	
JDEP	WR/RC	VARIOUS	1.305	10/05	1.670	10/06	0.000	10/07	0.000	10/08	CONT.	CONT.	
CNI/OA Transformation Roadmap	CPFF	GENERAL DYNAMIC	18.446	VARIOUS	20.257	VARIOUS	11.862	VARIOUS	11.067	VARIOUS	CONT.	CONT.	
CNI/OA Transformation Roadmap	WX	NSWC DD	1.775	VARIOUS	1.949	VARIOUS	1.141	VARIOUS	1.065	VARIOUS	CONT.	CONT.	
CNI/OA Transformation Roadmap	WX	CDSA	1.040	VARIOUS	1.142	VARIOUS	0.669	VARIOUS	0.624	VARIOUS	CONT.	CONT.	
CNI/OA Transformation Roadmap	VARIOUS	VARIOUS	1.894	VARIOUS	2.080	VARIOUS	1.218	VARIOUS	1.136	VARIOUS	CONT.	CONT.	
OA Test and Retest	VARIOUS	VARIOUS	8.500	10/05	0.000						CONT.	CONT.	
Contract Engineering Support	VARIOUS	VARIOUS	3.557	11/05	2.134	11/06	2.500	11/07	2.600	11/08	CONT.	CONT.	
Contract Program Mgt Support	VARIOUS	VARIOUS	1.100	11/05	2.096	11/06	1.516	11/07	1.500	11/08	CONT.	CONT.	
Travel		NAVSEA TRAVEL	0.250	09/06	0.250	09/07	0.250	09/08	0.250	09/09	CONT.	CONT.	
Subtotal Product Development			74.626		64.088		53.427		53.435				

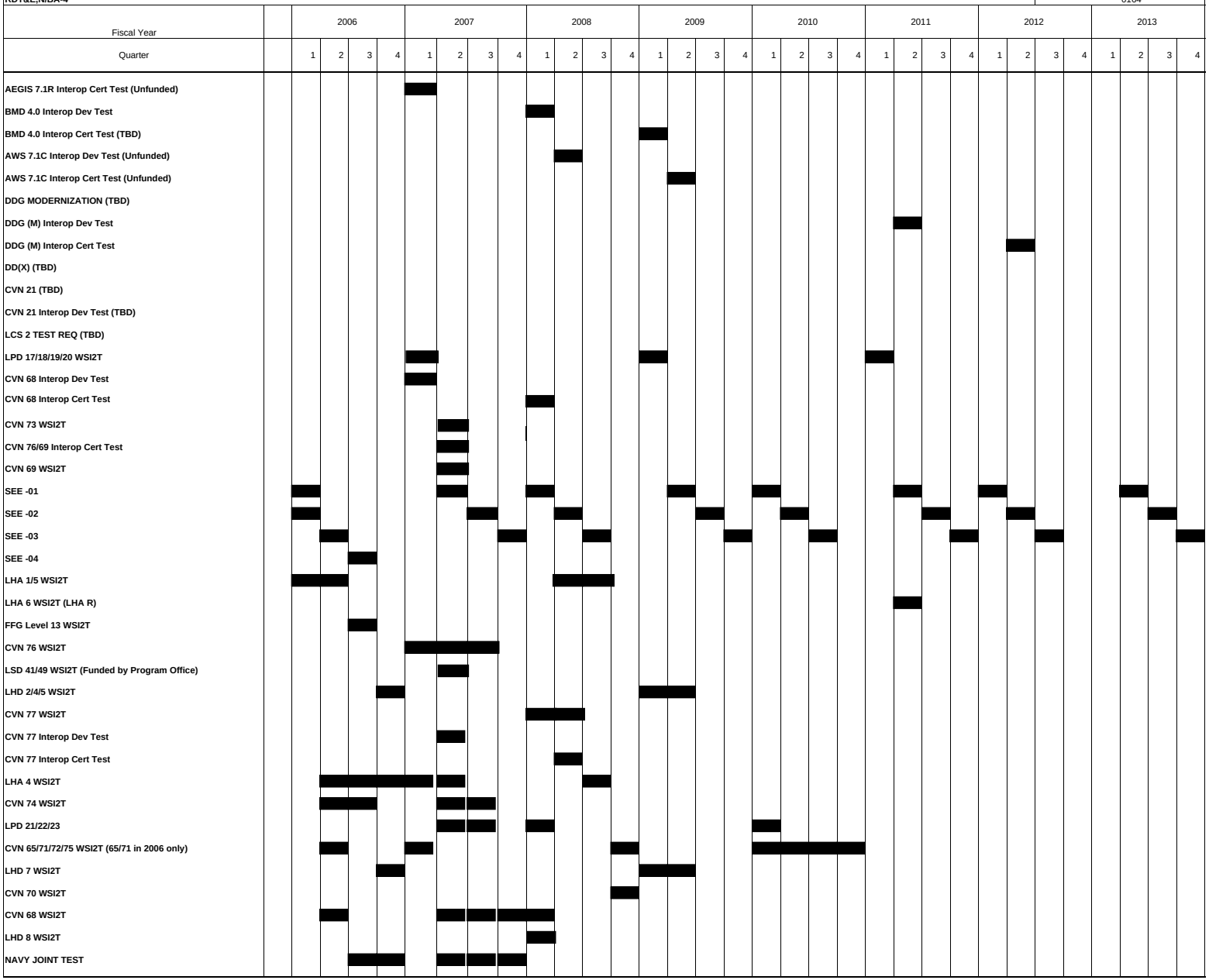
Remarks:

EXHIBIT R4, Schedule Profile

DATE:
February 2007

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

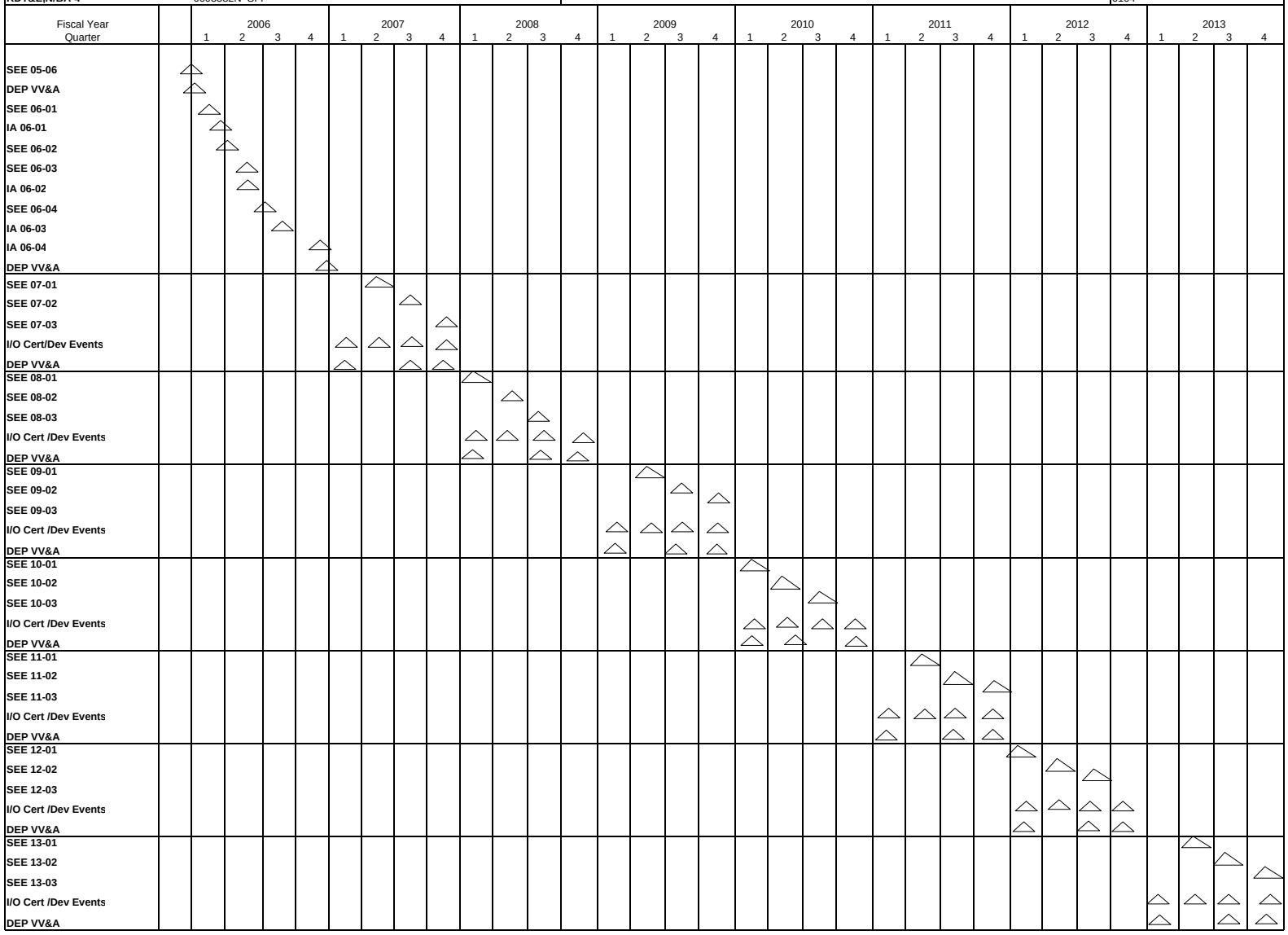
PROJECT NUMBER AND NAME
0164



The shaded bars reflect test windows and are not indicators of progress.

Exhibit R-4a, Schedule Detail						DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**						PROJECT NUMBER AND NAME 0164 CSI/SFI			
Schedule Profile		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY2013
	AEGIS 7.1R Interop Cert Test (Unfunded)		1Q						
	BMD 4.0 Interop Dev Test			1Q					
	BMD 4.0 Interop Cert Test				1Q				
	AWS 7.1C Interop Dev Test (Unfunded)			2Q					
	AWS 7.1C Interop Cert Test (Unfunded)				2Q				
	DDG MODERNIZATION		TBD	TBD	TBD	TBD	TBD	TBD	TBD
	DDG (M) Interop Dev Test						2Q		
	DDG (M) Interop Cert Test							2Q	
	DD(X)					TBD	TBD	TBD	TBD
	CVN 21					TBD	TBD	TBD	TBD
	CVN 21 Interop Dev Test		TBD	TBD	TBD	TBD	TBD	TBD	TBD
	LCS 2 (TEST REQTS TBD)			TBD					
	LPD 17/18/19/20 WSI2T		1Q		1Q		1Q		
	CVN 68 Interop Dev Test		1Q						
	CVN 68 Interop Cert Test			1Q					
	CVN 73 WSI2T		2Q						
	CVN 76/69 Interop Cert Test		2Q						
	CVN 69 WSI2T		2Q						
	SEE -01	1Q	2Q	1Q	2Q	1Q	2Q	1Q	2Q
	SEE -02	1Q	3Q	2Q	3Q	2Q	3Q	2Q	3Q
	SEE -03	2Q	4Q	3Q	4Q	3Q	4Q	3Q	4Q
	SEE -04	3Q							
	LHA 1/5 WSI2T	1Q, 2Q		2Q, 3Q					
	LHA 6 WSI2T (LHA R)						2Q		
	FFG Level 13 WSI2T	3Q							
	CVN 76 WSI2T		1Q, 2Q, 3Q						
	LSD 41/49 WSI2T (Funded by Program Office)		2Q						
	LHD 2/4/5 WSI2T	4Q			1Q, 2Q				
	CVN 77 WSI2T			1Q, 2Q					
	CVN 77 Interop Dev Test		2Q						
	CVN 77 Interop Cert Test			2Q					
	LHA 4 WSI2T	2Q, 3Q, 4Q	1Q, 2Q	3Q					
	CVN 74 WSI2T	2Q, 3Q	2Q, 3Q						
	LPD 21/22/23		2Q, 3Q	1Q		1Q			
	CVN 65/71/72/75 WSI2T (65/71 2006 Only)	2Q	1Q	4Q		1Q, 2Q, 3Q, 4Q			
	LHD 7 WSI2T	4Q			1Q, 2Q				
	CVN 70 WSI2T			4Q					
	CVN 68 WSI2T	2Q	2Q,3Q, 4Q	1Q					
	LHD 8 WSI2T			1Q					
	NAVY JOINT TEST	3Q/4Q	2Q/3Q/4Q						

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603582N SFI	PROJECT NUMBER AND NAME 0164



CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	0603582N CSI/SFI	9999 / Various Congressional Plus Ups

B. Accomplishments/Planned Program (Cont.)

FY06/FY07 Congressional Plus Ups

Trouble Report Information Database	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.986	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	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.

Visualization & Service-Oriented Architecture for Strike Force Interoperability	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.996	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
Project 9A02N. Funds provide end-to-end support for the management and execution of a Department of Defense effort to monitor, manage and enforce interoperability of Command, Control, Computers, Communications and Intelligence (C4I) and Combat Systems Command, Control, Computers Communications and Intelligence (C5I) systems installed aboard US Navy vessels and those installed or in use at shore stations and joint and coalition units operating with those vessels. It includes business process modeling, program management systems support, requirements analysis, architectural design, systems engineering support, web applicatior development within existing web applications, visualization tool development, configuration management, testing and results analysis.

Open Architecture/Maintenance Free Operating Period (OA/MFOP)	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.295	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

These funds were provided by Congressional Plus Up.
Project 9999N. Congressional Add for Open Architecture/Maintenance Free Operating Period (OA/MFOP).

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603609N/Conventional Munitions			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**33.422**	**23.297**	**8.941**	**9.642**	**10.383**	**7.697**	**10.411**	**10.956**
1821/Conventional Fuzed Warhead Package	**8.627**	**9.821**	**4.369**	**4.728**	**4.988**	**4.306**	**4.575**	**4.850**
2299/Non-Nuclear Expendable Ordnance	**21.773**	**9.882**	**1.603**	**1.901**	**2.163**	**0.149**	**2.536**	**2.747**
0363/Insensitive Munitions Advanced Development	**3.022**	**2.598**	**2.969**	**3.013**	**3.232**	**3.242**	**3.300**	**3.359**
9999 / Congressional Add	**0.000**	**0.996**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
2007 President's Budget	36.385	22.385	23.214	23.561
2008 President's Budget	33.422	23.297	8.941	9.642
Total Adjustments	-2.963	0.912	-14.273	-13.919
Summary of Adjustments				
Reprogramming	-2.674			
Undistributed General Reductions	0.028	-0.088		
SBIR	-0.271			
Congressional add		1.000		
Program Adjustments			-14.273	-13.919
Cancelled Accounts	-0.046			
Subtotal	-2.963	0.912	-14.273	-13.919

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**8.627**	**9.821**	**4.369**	**4.728**	**4.988**	**4.306**	**4.575**	**4.850**
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER / NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	1821/Conventional Fuzed Warhead Package

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.100	0.000	0.000	0.000
RDT&E Articles Quantity				

Micro-Electro-Mechanical System Safe and Arm Device:
FY06: System Development and Demonstration (SD&D) contract award. Build Safe and Arm Device. Integrate with warhead and test.

RDT&E Articles Quantity				
	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.100	0.968	0.524	0.560

Future Missile Systems (FMSS) Studies:
FY 06/07/08/09: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.427	8.853	3.845	4.168
RDT&E Articles Quantity				

Advanced Fuze Technology Development:
FY06 - Continue to conduct risk reduction and other preparations for transition advanced fuze technologies to System Development and Demonstration.
FY07/FY08/FY09 - Implement advanced fuze technologies to System Development and Demonstration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	1821/Conventional Fuzed Warhead Package

C. OTHER PROGRAM FUNDING SUMMARY:

Not Applicable

D. ACQUISITION STRATEGY:

Not Applicable

E. 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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603609N/Conventional Mun

PROJECT NUMBER AND NAME: 1821/Conventional Fuzed Warhead Package

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Analysis	WR/WX	NSWC Dahlgren	32.009									Continuing	Continuing	
	WR/WX	NAWC China Lake	66.538	0.100	10/05							Continuing	Continuing	
	CPAF	Raytheon	32.531	8.251	11/05	8.687	11/06	3.679	11/07	4.002	12/08	Continuing	Continuing	
	PR	JHU/APL	3.878	0.100	03/06	0.968	12/06	0.524	12/07	0.560	12/08	Continuing	Continuing	
	RC	ONR	0.067									0.000		
	MIPR	MIT/LL	0.400									0.000		
	WR	SPAWAR	0.520									0.000		
	WR/WX	NSWC Port Hueneme	3.020									0.000		
	WR/WX	NSWC Indian Head	0.800									Continuing	Continuing	
	PD	Office of Special Projects	10.394									Continuing	Continuing	
Hardware Fabrication	WR	NSWC Dahlgren	6.257									Continuing	Continuing	
	WR	NAWC China Lake	8.683									Continuing	Continuing	
	CPAF	Raytheon	8.516									Continuing	Continuing	
	PD	Office of Special Projects	41.549									Continuing	Continuing	
Subtotal Product Development			215.162	8.451		9.655		4.203		4.562		Continuing	Continuing	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603609N/Conventional Mun

PROJECT NUMBER AND NAME: 1821/Conventional Fuzed Warhead Package

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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		0.000				
Remarks:														
Program Management Support	WR	NSWC Dahlgren	2.074									0.000		
	WR	NAWC China Lake	3.360									0.000		
	C/FPI	Various	6.781	0.166	11/05	0.166	11/06	0.166	11/07	0.166	11/08	Continuing	Continuing	
	RC	NSWC Indian Head	0.160									0.000		
Travel	PD	NAVSEA Travel	0.400	0.010	10/05							Continuing	Continuing	
Subtotal Management			12.775	0.176		0.166		0.166		0.166				
Remarks:														
Total Cost			257.268	8.627		9.821		4.369		4.728		Continuing	Continuing	
Remarks:														

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**21.773**	**9.882**	**1.603**	**1.901**	**2.163**	**0.149**	**2.536**	**2.747**
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 and Next Generation Surface 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA - 4	0603609N Conventional Munitions	2299 Non-Nuclear Expendable Ordnance (NNEO)

B. Accomplishments/Planned Program

		FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		21.773	9.882	1.603	1.901
RDT&E Articles Quantity		25	10	4	4

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.
1. FY2006 PLANS:
GIF: 25 GIFs delivered for development test and evaluation to achieve Technology Readiness Level 5 for GIF
2. FY2007-FY2009 PLANS:
GIF: Continue development of GIF design to Technogy Readiness Level (TRL) level 6. Continue development of miniature Global Positioning System (GPS) Selective Availability Anti-Spoofing Module (SAASM) Receiver to TRL level 6. Both items support Precision Guidance Kit (PGK) Milestone B (MSB).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N Conventional Munitions	2299 Non-Nuclear Expendable Ordnance (NNEO)

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

D. ACQUISITION STRATEGY:

-Continue development of Guidance Integrated Fuze to Technology Readiness Level 6. Continue Development of GPS SAASM Receiver to Technology Readiness Level of 6. The GIF program is working in collaboration with the US Army's Precision Guidance Kit (PGK) Program. The GIF Fuze and GPS Receiver are being actively followed by the PGK program as potential PGK increment 2 requirement solution for entry into SD&D at MS B in 2nd Quarter FY08.

E. MAJOR PERFORMERS:

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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA 4**

PROGRAM ELEMENT: 0603609N Conventional Munitions

PROJECT NUMBER AND NAME: 2299 Non-Nuclear Expendable Ordnance (NNEO)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/05 Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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 - GIF		2.342	Oct-05			0.450	Oct-07	0.927	Oct-08			
	WR	NSWC Dahlgren - ASP	0.324										0.324	
	C/CPFF	ALLIANT - MFF	1.054										1.054	
	SS/CPFF	MOTOROLA - MFF	0.336										0.336	
	WR	NSWC Indian Head - ERPC	1.039										1.039	
	CPFF	Mayflower Communications - GIF	12.770	2.269	Feb-06	0.750	Jan-08	0.500	Dec-07				16.289	
	CPFF	CAES - GIF	5.400	2.962	Feb-06	3.000	Jan-08						11.362	
	CPFF	Toyon - GIF	1.300	0.300	Aug-06	0.250	Jan-08						1.850	
	CPFF	TBD - GIF	3.100	7.000	May-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										Continuing	Continuing	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			27.256	14.873		4.000		0.950		0.927		0.000	Continuing	

Remarks:

Development Support	WR	NSWC Dahlgren - GIF	3.421	1.350	Oct-05	1.792	Oct-06					Continuing	Continuing	
Development Support	WR	DOE Sandia - GIF	0.700	1.300	May-06	0.459	Oct-06					Continuing	Continuing	
Software Development	WR	NSWC Dahlgren - GIF	0.475	0.100	Oct-05	0.300	Oct-06	0.100	Oct-07			Continuing	Continuing	
Training Development	WR	NSWC Dahlgren - GIF	0.125										0.125	
	WR	NSWC Dahlgren - ASP											0.000	
Training Development	MIPR	ARDEC - GIF	0.350										0.350	
Integrated Logistics Support	WR	NSWC Dahlgren - GIF	0.175									Continuing	Continuing	
Integrated Logistics Support	MIPR	ARDEC - GIF	0.480				Oct-06					Continuing	Continuing	
Configuration Management	WR	NSWC Dahlgren - GIF	0.750	0.400	Oct-05	0.150	Oct-06					Continuing	Continuing	
Contract Support	WR	NSWC Dahlgren - GIF	0.500	0.250	Oct-05	0.150	Oct-06					Continuing	Continuing	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			6.976	3.400		2.851		0.100		0.000		0.000	Continuing	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603609N Conventional Munitions

PROJECT NUMBER AND NAME: 2299 Non-Nuclear Expendable Ordnance (NNEO)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/05 Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Dahlgren - GIF	5.196	1.100	Oct-05	1.521	Oct-06	0.297	Oct-07	0.824	Oct-08	Continuing	Continuing	
	WR	NSWC Dahlgren - MFF	0.472										0.472	
	WR	NSWC Dahlgren - ASP										Continuing	Continuing	
	WR	NSWC China Lake - MFF	0.200										0.200	
	WR	US Army Redstone - GIF	1.600	0.850	02/06	0.300	Oct-06						2.750	
	WR	ARL - GIF	1.500			.						Continuing	Continuing	
Operational Test & Evaluation	WR	COMOPTEVFOR - MFF	0.428									Continuing	Continuing	
	WR	COMOPTEVFOR - GIF	0.330										0.330	
	WR	NSWC Dahlgren -MFF	0.178									Continuing	Continuing	
	MIPR	ARDEC - GIF	0.950									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									Continuing	Continuing	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			11.615	1.950		1.821		0.297		0.824		0.000	Continuing	

Remarks:

Contractor Engineering Support	FP	EDO - MFF	0.032										0.032	
	C/CPFF	ALLIANT - MFF	0.113										0.113	
	FP	Various	0.800	0.115	Nov-05							Continuing	Continuing	
Government Engineering Support	WR	NSWC Dahlgren - GIF	6.683	1.125	Oct-05	0.650	Oct-06	0.106	Oct-07			Continuing	Continuing	
Government Engineering Support	WR	NSWC Dahlgren - MFF	0.398										0.398	
Government Engineering Support	MIPR	ARDEC/ARL - GIF	0.400		Oct-05	0.200	Oct-06					Continuing	Continuing	
Program Management Support	WR	NSWC Dahlgren - GIF	1.093	0.310	Oct-05	0.360	Oct-06	0.150	Oct-07	0.150	Oct-08	Continuing	Continuing	
Program Management Support	MIPR	ARDEC - GIF	0.200									Continuing	Continuing	
Travel	WR	NSWC Dahlgren - MFF	0.020										0.020	
Labor (Research Personnel)													0.000	
SBIR Assessment	WR	Dahlgren											0.000	
Subtotal Management			9.739	1.550		1.210		0.256		0.150		0.000	Continuing	

Remarks:

Total Cost			55.586	21.773		9.882		1.603		1.901		0.000	Continuing	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0603609N Conventional Munitions		2299 Non-Nuclear Expendable Ordnance (NNEO)

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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																																
Prototype Phase																	Projectile Rotating Band Redesign								Propelling Charge Design							
																											GWS Integration					
GIF Technology Demonstration			Guided Demo					TRL 6 GIF		TRL 6 Receiver				TRL 7 Receiver																		
GIF System Development & Demonstration (SDD)										MS B																						
Test & Evaluation Milestones																																
Development Test				Receiver Dev Test							Receiver Dev Test																					
Operational Test																																
Production Milestones																																
Deliveries																																

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

Note: The GIF program is working in collaboration with the Army's Precision Guidance Kit (PGK) program.
Acquisition milestones are part of PGK program.

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-5**	PROGRAM ELEMENT 0603609N Conventional Munitions				PROJECT NUMBER AND NAME 2299 Non-Nuclear Expendable Ordnance (NNEO)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
TRL6 GIF to Support PGK Inc 2 MSB		4Q07						
TRL6 GPS Receiver to Support PGK Inc 2 MSB			2Q08					
Milestone B (PGK)			3Q08					
TRL7 GPS Receiver to Support PGK				3Q09				
Projectile Rotating Band Redesign					4Q10			
Propelling Charge Design							4Q12	
GWS Integration								4Q13

Note: The GIF program is working in collaboration with the Army's Course Correcting Fuze (CCF) program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY 2012	FY 2013
Project Cost	**3.022**	**2.598**	**2.969**	**3.013**	**3.232**	**3.242**	**3.300**	**3.359**
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.900	0.998	1.074	1.090
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 dat

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.700	0.422	0.495	0.508
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.346	0.596	0.600	0.605
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.700	0.432	0.500	0.505
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.376	0.150	0.300	0.305
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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	

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

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603609N/Conventional Munitions

PROJECT NUMBER AND NAME: 0363/Insensitive Munitions Advanced Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Propulsion Dev. And Eval.	WX	NAWC WPN DIV/China Lake	86.517	0.709	11/05	0.609	11/06	0.695	11/07	0.753	11./08	0.000	89.283	NA
		NAWC WPN DIV/China Lake	10.250										10.250	
Explosives Dev. And Eval.	WX	NSWC/Indian Head Div.	69.925	0.897	11/05	0.800	11/06	0.850	11/07	0.860	11./08	0.000	73.332	NA
Ordnance Dev. And Eval.	WX	NSWC/Dahlgren Div.	19.421	0.376	11/05	0.389	11/06	0.400	11/07	0.388	11./08	0.000	20.974	NA
Pyrotechnic Dev. And Eval.	WX	NSWC/Crane Div.	6.570	0.000		0.000		0.000				0.000	6.570	NA
Gun Propulsion and Eval.	WX	NSWC/Indian Head Div.	0.000	0.356	11/05	0.300	11/06	0.350	11/07	0.340	11./08	0.000	1.346	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			192.683	2.338		2.098		2.295		2.341		0.000	201.755	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	0.000	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603609N/Conventional Munitions

PROJECT NUMBER AND NAME: 0363/Insensitive Munitions Advanced Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	0.684	11/05	0.500	11/06	0.674	11/07	0.672	11./08	0.000	5.128	NA
Travel	WX	NOSSA											0.382	
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			32.524	0.684		0.500		0.674		0.672		0.000	34.382	NA
Remarks:														
Total Cost			225.207	3.022		2.598		2.969		3.013		0.000	236.809	NA
Remarks:														

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	9999/Congressional Add

B. Accomplishments/Planned Program (Cont.)

9A03N	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.996	0.000	0.000
RDT&E Articles Quantity				

Non-Discarding Sabot Ammunition.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

EXHIBIT R-2, RDT&E Budget Item Justification

DATE: FEBRUARY 2007

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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
TOTAL Program Element (PE)	**243.945**	**347.820**	**288.220**	**316.052**	**143.874**	**112.284**	**26.130**	**0.000**
B0020 EXPEDITIONARY FIGHTING VEHICLE (EFV)	243.945	341.942	288.22	316.052	143.874	112.284	26.130	0.000
9999 Congressional Adds		5.878						
RDT&E Article Quantities		**7**						

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

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 (EMW) capstone. The EFV will provide the MAGTF with increased operational tempo, survivability, and lethality throughout the battle space and across all quadrants of conflict. The EFV program is a self-deploying, high water-speed, amphibious, armored tracked vehicle. The EFV provides essential command, control, communications, and intelligence (C4I) functions for embarked personnel and EFV units. The EFV C4I systems are compatible with other Marine Corps systems as well as with Army, Air Force, Navy, and NATO C4I systems. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the EFV will provide Marine Corps Warfighters with the tactical mobility required to spearhead the concepts within the EMW capstone.
In addtion, the EFV provides significant improvements in survivability, lethality and mobility over the legacy AAV7A1.

The program received approval to enter the System 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 initial SDD Phase (2001 through 2008) will include validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV. A follow-on SDD Phase begining in FY 2007 will include continued design, development, and reliability growth upgrades; increased reliability, availability and maintainability (RAM) testing; major modification of exisitng SDD prototypes, and the manufacture and testing of seven additional SDD vehicles.

9999: FY 2007 Congressional adds for AN/UXC-10 Digital Facsimile Upgrade for EFV and Intelligent Machining of Advanced Defense Material

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Advanced Component Dev. and Prototypes	PROGRAM ELEMENT NUMBER AND NAM 0603611M Marine Corps Assault Vehicles	PROJECT NUMBER AND NAME: B0020 Expeditionary Fighting Vehicle (EFV)	

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
TOTAL Program Element (PE)	**243.945**	**347.820**	**288.220**	**316.052**	**143.874**	**112.284**	**26.130**	**0.000**	**Cont**	**Cont**
B0020 EXPEDITIONARY FIGHTING VEHICLE (EFV)	243.945	341.942	288.220	316.052	143.874	112.284	26.130	0.000	Cont	Cont
9999 CONGRESSIONAL ADDS		5.878								
RDT&E Article Quantities		**7**								

(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 573 weapon systems. The EFV program remains the Marine Corps number one priority ground system acquisition.

The program received approval to enter the System Development and Demonstration (SDD) Phase 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 initial SDD Phase (2001 through 2008) will include validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for EFV. A follow-on SDD Phase beginning in FY 2007 will include continued design, development, and reliability growth upgrades; increased RAM testing; major modification of existing SDD prototypes; and manufacture and testing of seven additional SDD prototype vehicles.

The Congressional Adds in FY 07 are for AN/UXC-10 Digital Facsimile Upgrade for the EFV ($2.889), and for Intelligent Machining of Advance Defense Material ($2.989M).

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009
Accomplishment/Effort Subtotal Cost	193.338	305.624	247.945	262.953
RDT&E Articles Qty		7		

(U) Design development, developmental testing, operational testing, and survivability program.

FY06: Continue design development, manufacturing planning, and producibility design enhancements of the EFV-P and EFV-C designs. Continue the EFV survivability program. Support Developmental 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 support of operational testing, design development, manufacturing planning, and design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Continue Developmental Testing (DT) and Reliability/Availability/Maintainability (RAM) testing and support. Review and analyze results from initial operational assessment period; design, integration and testing of MS-C OA identified modifications. Continue development of Integrated Electronic Technical Manuals (IETMs). Perform major modification of existing vehicles integrating reliability design changes. Perform Highly Accelerated Life Testing (HALT) on vehicle components. Begin design, development, and manufacture of new SDD prototypes.
AN/UXC -10 Digital Facsimile Upgrade for EFV efforts.
Intelligent Machining of Advance Defense Material efforts.

FY08: Continue engineering and logistics efforts to support design development, manufacturing planning, and design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Continue developmental and reliability test support, and design, integration and testing of MS-C OA identified modifications. Continue development of Integrated Electronic Technical Manuals (IETMs). Support Developmental Testing (DT) and Reliability/Availability/Maintainability (RAM) testing, in support of MS-C decision. Continue design, development and manufacture of new SDD prototypes. Continue modification of existing SDD vehicles.

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAM**	**PROJECT NUMBER AND NAME:**
RDT&E, N /BA-4 Advanced Component Dev. and Prototypes	0603611M Marine Corps Assault Vehicles	B0020 Expeditionary Fighting Vehicle (EFV)

FY09: Continue engineering and logistics efforts to support design development, manufacturing planning, and design enhancements of the EFV(P) and EFV(C) designs. Continue the EFV survivability program. Continue developmental and reliability test support. Continue development of Integrated Electronic Technical Manuals (IETMs). Complete fabrication and delivery of new SDD assets. Support Milestone C Operational Assessment; review and analyze operational assessment results; process, design, and incorporate required changes. Procure required test spares.

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009
Accomplishment/Effort Subtotal Cost	14.346	16.210	15.454	17.964
RDT&E Articles Qty				

(U) Perform developmental testing, operational testing, and RAM-D testing.

FY06: Continue to perform developmental testing, operational testing, and RAM-D Testing.

FY07: Continue to perform developmental testing, operational testing and RAM-D testing, conduct Cold Weather OA,

FY08: Continue to perform developmental testing, operational testing and RAM-D testing; conduct reliability testing.

FY09: Continue to perform developmental testing, operational testing and RAM-D testing. Conduct Milestone C Operational Assessment.

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009
Accomplishment/Effort Subtotal Cost	14.771	5.445	4.431	16.465
RDT&E Articles Qty				

(U) Provide program support for Training Development, Technical Publications and IETMS.

FY06/07: Development of training devices/simulators, EFV training courseware, technical publications and IETMS.

FY08/09: Continue to provide program support for training systems development, technical publications and IETMS.

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009
Accomplishment/Effort Subtotal Cost	8.990	9.184	9.810	9.274
RDT&E Articles Qty				

FY06 - FY09: Continue to provide contractor technical, engineering and management support for program planning, analysis and execution.

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009
Accomplishment/Effort Subtotal Cost	12.500	11.357	10.580	9.396
RDT&E Articles Qty				

FY06 - FY09: Continue to provide In-House engineering and logistics technical support for program planning, analysis and execution.

	FY2006	FY2007	FY2008	FY2009
(U) Total $	243.945	347.820	288.220	316.052

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAM**	**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 2006**	**FY 2007**	**FY 2008**	**FY 2009**
(U) FY 2007 President's Budget:	**249.727**	**188.306**	**171.923**	**94.120**
(U) Congressional Program Reductions	0.000	0.000	0.000	0.000
(U) Congressional Rescissions	0.000	0.000	0.000	0.000
(U) Congressional Increases	0.000	160.293	0.000	0.000
(U) Reprogrammings	0.000	0.000	115.254	221.170
(U) SBIR/STTR Transfer	-5.971	0.000	0.005	0.003
(U) Minor Affordability Adjustments	0.189	-0.779	1.038	0.759
(U) FY 2008 President's Budget:	**243.945**	**347.820**	**288.220**	**316.052**

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY06 reflects a Small Business Innovative Research (SBIR) reduction and increases for Revised Economic Assumptions.

FY07 reflects FFRDC and revised economic assumptions reductions. Increases reflected are due to the Congressional adjustment for the revised EFV Acquisition Strategy and Congressional Adds for Digital Facsimile Upgrade and Intelligent Machining

FY08 reflects NWCF Rate Adjustments, inflation adjustments, and a Department increase for continued EFV development.

FY09 reflects NWCF Rate Adjustments, BRAC Adjustments, Inflation adjustments and a Department increase for continued EFV development.

(U) Schedule: The EFV program schedule and total production quantity have been adjusted in accordance with the Department's decision to maintain a two Marine Expeditionary Brigade (MEB) force structure vice three MEB, and reflect the intent and support of the Strategic Planning Guidance. As a result, the EFV total production quantities were reduced from 1,013 to 573, and program schedule adjusted in accordance with funded quantities and Marine Corps fielding strategy. The Milestone C (MS C) Operational Assessment, MS C decision, and initial contract award originally slipped three months (to Dec 06) due to the late return of 3rd Battalion, 1st Marine Division from duty in Iraq. As a result of lower than expected demonstrated reliability during Operational Assessment, the Milestone C decision planned for Dec 06 and subsequent program milestones will be postponed as reflected in the table below. The detailed program schedule is provided in Exhibit R-4.

	FY07 President's Budget	**FY08 President's Budget**
Milestone C Decision	4Q FY06	2Q FY10
LRIP Contract Award	1Q FY07	2Q FY10
IOT&E	3Q FY09- 2Q FY10	4Q FY12-2Q FY13
Full Rate Production Decision	4Q FY10	1Q FY14
IOC	4Q FY10	1Q FY14

(U) Technical: Not Applicable

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	**PROGRAM ELEMENT NUMBER AND NAM**	**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) C. OTHER PROGRAM FUNDING SUMMARY: Line Item No. & Name	**FY2006**	**FY2007**	**FY2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**To Compl**	**FY06-To Comp**
(U) PANMC, BLI #147500, EFV	**5.661**	**0.000**	**0.004**	**6.573**	**15.946**	**15.833**	**31.570**	**32.812**	**Con't**	**Con't**
(U) PMC BA2, BLI #202200, EFV	28.752	0.000	0.000	0.000	438.862	663.843	760.380	779.445	5,613.612	8,284.894
(U) PMC BA7 (Spares), BLI (NA), EFV	0.000	0.000	0.000	0.000	15.160	27.193	33.085	34.252	244.873	354.563
(U) Procurement, EFV Totals	**28.752**	**0.000**	**0.000**	**0.000**	**454.022**	**691.036**	**793.465**	**813.697**	**5,858.485**	**8,639.457**
(U) MILCON P-042	0.000	0.000	0.000	0.000	0.000	0.000	28.157	0.000	0.000	28.157
(U) MILCON P-101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.011	0.000	11.011
(U) MILCON P-373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.204	0.000	4.204
(U) MILCON, EFV Totals	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**28.157**	**15.215**	**0.000**	**43.372**

(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.

(U) D. ACQUISITION STRATEGY:

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 initial SDD phase of the program, nine prototype vehicles were manufactured and tested extensively in developmental and operational tests. A tenth vehicle was manufactured for use during Full Up System Level Lethality testing. A follow-on SDD phase commencing in FY07 will include the incoporation of major reliability modifications into existing prototypes and the manufacture and testing of seven new SDD prototypes. Low Rate Initial Production is scheduled to begin in FY10 . Initial Operational Capability (IOC) and Full Operational Capability (FOC) will occur in FY14 and FY23, respectively.

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.

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.

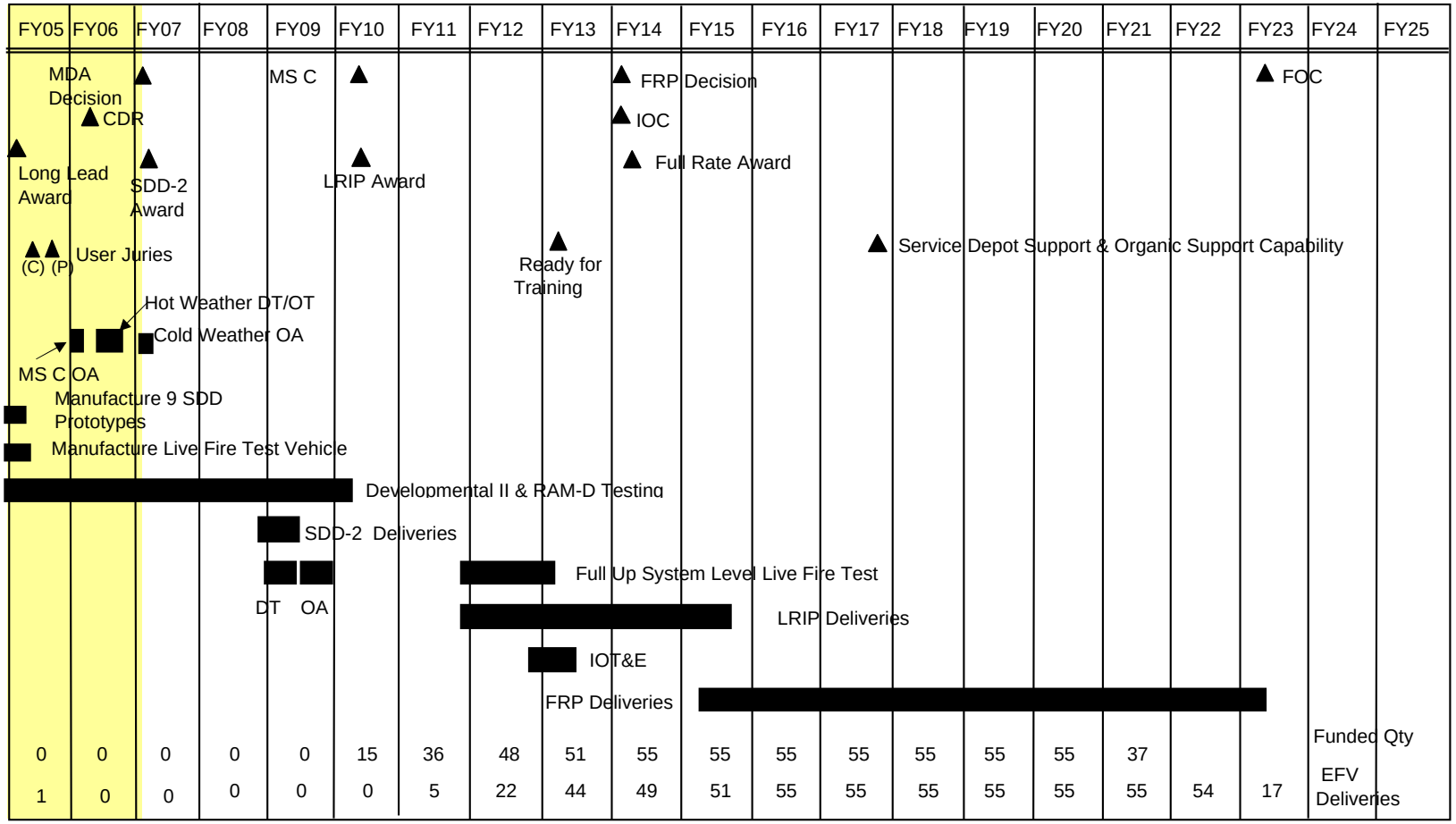
The program's contracting approach for the EFV is to award the vast majority of the work to one prime contractor, competitively selected in 1996. GDLS operating through its division General Dynamics Amphibious System will be responsible for designing and producing the vehicle and providing support for 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 support for the fielded EFVs.

(U) E. MAJOR PERFORMERS:
General Dynamics, Woodbridge, VA. Validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing Life Cycle Management. Initial SDD contract awarded Feb 01.

Exhibit R-3 Cost Analysis													DATE: FEBRUARY 2007	
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	**Contract**	**Performing**	**Total**		**FY 06**		**FY 07**		**FY 08**		**FY 09**	**Cost to**	**Total**	**Target**
(Tailor to WBS, or System Rqmt	**Method**	**Activity &**	**PY s**	**FY 06**	**Award**	**FY 07**	**Award**	**FY 08**	**Award**	**FY 09**	**Award**	**Complete**	**Cost**	**Value of**
Product Development	**& Type**	**Location**	**Cost**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**			**Contract**
PDRR Contract	CPAF	GDLS - Woodbridge, VA	399.703	0.000		0.000		0.000		0.000				
System Design and Development	CPAF	GDLS - Woodbridge, VA	858.015	189.203	1Q	176.285	1-3Q	86.688	1Q	0.000				
System Design and Development	TBD	GDLS - Woodbridge, VA	0.000	0.000		118.261	3Q	158.508	1Q	262.603	1Q	Continuing	Continuing	
Regenerative Filtration	CPAF	Army, Edgewod Chem/Bio Ctr	3.327	0.000		0.000		0.000		0.000				
Survivability Contract	Classified	NSMA, Arlington, VA	18.467	4.135	2Q	5.200	1Q	2.750	1Q	0.350	1Q	Continuing	Continuing	
Display Technology	CPFF	ISR Corp	1.640	0.000		0.000		0.000		0.000				
Intelligent Machining of Advanced Defense Materials	TBD	TBD	0.000	0.000		2.989	2Q	0.000		0.000				
Digital Facsimile Upgrade	TBD	TBD	0.000	0.000		2.889	2Q	0.000		0.000				
Sub Total Product Development			**1,281.152**	**193.338**		**305.624**		**247.946**		**262.953**				
Remarks:														
Cost Categories	**Contract**	**Performing**	**Total**		**FY 06**		**FY 07**		**FY 08**		**FY 09**	**Cost to**	**Total**	**Target**
(Tailor to WBS, or System Rqmt	**Method**	**Activity &**	**PY s**	**FY 06**	**Award**	**FY 07**	**Award**	**FY 08**	**Award**	**FY 09**	**Award**	**Complete**	**Cost**	**Value of**
Program Support	**& Type**	**Location**	**Cost**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**			**Contract**
Integrated Logistics Support	Various	Various	0.000	1.348	2Q	2.449	2Q	2.313	2Q	2.490	2Q	Continuing	Continuing	
Training Devices/Simulators	CPAF	GDLS	31.681	14.417	1Q	4.845	1Q	4.050	2Q	14.525	2Q	Continuing	Continuing	
Tech Data & Pubs Development	Various	Various	0.000	0.355	2Q	0.500	2Q	0.380	2Q	0.680	2Q	Continuing	Continuing	
Support Equipment Development	Various	Various	0.000	0.000		0.100	2Q	0.000	2Q	1.260	2Q	Continuing	Continuing	
Subtotal Program Support			**31.681**	**16.120**		**7.894**		**6.743**		**18.955**				
Remarks:														
Cost Categories	**Contract**	**Performing**	**Total**		**FY 06**		**FY 07**		**FY 08**		**FY 09**	**Cost to**	**Total**	**Target**
(Tailor to WBS, or System Rqmt	**Method**	**Activity &**	**PY s**	**FY 06**	**Award**	**FY 07**	**Award**	**FY 08**	**Award**	**FY 09**	**Award**	**Complete**	**Cost**	**Value of**
Test & Evaluation	**& Type**	**Location**	**Cost**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**			**Contract**
Developmental, Operational and Live Fire Test & Evaluation	Various	Various Locations	57.639	14.345	2Q	16.210	2Q	15.454	2Q	17.964	2Q	Continuing	Continuing	
Sub Total Test & Evaluation			**57.639**	**14.345**		**16.210**		**15.454**		**17.964**				
Remarks:														
Cost Categories	**Contract**	**Performing**	**Total**		**FY 06**		**FY 07**		**FY 08**		**FY 09**	**Cost to**	**Total**	**Target**
(Tailor to WBS, or System Rqmt	**Method**	**Activity &**	**PY s**	**FY 06**	**Award**	**FY 07**	**Award**	**FY 08**	**Award**	**FY 09**	**Award**	**Complete**	**Cost**	**Value of**
	& Type	**Location**	**Cost**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**	**Cost**	**Date**			**Contract**
Contract Advisory & Asst Svc (A&AS)														
Engineering and Technical Services	RCP / MIPR	Various	13.562	3.139	2Q	2.573	2Q	3.026	2Q	2.571	2Q	Continuing	Continuing	
Management Support Services	RCP / MIPR	Various	31.641	5.851	2Q	6.611	2Q	6.784	2Q	6.703	2Q	Continuing	Continuing	
Studies and Analyses	TBD	TBD	0.000	0.000		0.000		0.000		0.000				
Sub Total A&AS			**45.203**	**8.990**		**9.184**		**9.810**		**9.274**				
Remarks:														
Management Support														
In-House Technical Support	Various	Various	82.806	8.479	1Q	6.490	1Q	5.946	1Q	4.168	1Q	Continuing	Continuing	
Program Management Support	Various	Various	20.803	0.663	2Q	1.388	2Q	1.271	2Q	1.638	2Q	Continuing	Continuing	
Travel		Various	0.000	2.010	1-4Q	1.030	1-4Q	1.050	1-4Q	1.100	1-4Q	Continuing	Continuing	
Sub Total Management Support			**103.609**	**11.152**		**8.908**		**8.267**		**6.906**				
Remarks:														
Total Cost			**1,519.284**	**243.945**		**347.820**		**288.220**		**316.052**		**Cont**		**Cont**

R-1 SHOPPING LIST - ITEM NO. 53

EFV PROGRAM SCHEDULE



R-1 SHOPPING LIST - Item No. 53

UNCLASSIFIED

Exhibit R-4/4a, Schedule Profile/Detail

Exhibit R-4/4a Schedule Profile/Detail									DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Development and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**				PROJECT NUMBER AND NAME **B0020 Expeditionary Fighting Vehicle (EFV)**				
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
SCHEDULE DETAIL									
MS C					2Q				
FRP Decision									1Q
IOC									1Q
Operational Assessments	2-4Q			3-4Q					
Developmental II & RAM-D Testing	1-4Q	1-4Q	1-4Q	1-4Q	1-3Q				
CDR	3Q								
SDD-2 Contract Award		2Q							
LRIP Contract Award					2Q				
Full Up System Level Live Fire Test						4Q	1-4Q	1Q	
LRIP Deliveries Lot 1						4Q	1-3Q		
IOT&E							4Q	1-2Q	
Ready for Training								2Q	
LRIP Deliveries Lot II					4Q	1Q-4Q	1Q-4Q		
Full Rate Contract Award									2Q

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603612M Marine Corps Mine/Countermeasures Systems**	PROJECT NUMBER AND NAME **C2106 Advanced Mine Detector**

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013
Project Cost	**5.514**	**3.763**	**0.657**	**0.000**	**0.000**	**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 fo 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) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.590**	**0.500**	**0.000**	**0.000**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**3.708**	**2.716**	**0.000**	**0.000**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.685**	**0.547**	**0.657**	**0.000**
RDT&E Articles Qty				

AMD: Update programmatic documentation and technical drawings. Development of technical manuals and training packages.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.531**	**0.000**	**0.000**	**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.

(U) Total $	**5.514**	**3.763**	**0.657**	**0.000**

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 Advanced Mine Detector**

(U) PROJECT CHANGE SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009
(U) FY 2007 President's Budget:	**3.216**	**3.777**	**0.653**	**0.000**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions	0.002			
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	2.322			
(U) SBIR/STTR Transfer	-0.027			
(U) Minor Affordability Adjustments	0.001	-0.014	0.004	
(U) FY 2008 President's Budget:	**5.514**	**3.763**	**0.657**	**0.000**

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.
(U) Schedule:
(U) Technical:

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PMC BLI 652000 Advanced Mine Detector	6.186	6.849	0.000	1.068	0.000	0.000	0.000	0.000	Cont	Cont
									Cont	Cont
									Cont	Cont

(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. 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) E. MAJOR PERFORMERS:

FY06 - Anniston Army Depot, Anniston Alabama/ Aberdeen Test Center, Aberdeen, MD, Test Activity/MCAS, Yuma Arizona
FY07 - Aberdeen Test Center, Aberdeen, MD, Test Activity

EXHIBIT R-2, RDT&E Budget Item Justification				DATE: February 2007				
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**12.829**	**12.904**	**80.403**	**52.191**	**18.545**	**15.172**	**20.465**	**21.205**
C1964 Anti-Armor Weapon System	**3.645**	**7.123**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
C2614 SMAW Follow-On	**0.565**	**0.501**	**3.327**	**8.194**	**0.525**	**0.525**	**0.515**	**0.513**
C3132 Joint Light Tactical Vehicle	**0.0**	**0.0**	**77.076**	**43.997**	**18.020**	**14.647**	**19.950**	**20.692**
C9999 Congressional Adds	**8.619**	**5.280**	**0.0**	**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.

B. PROGRAM CHANGE SUMMARY

	FY2006	FY2007	FY2008	FY2009
(U) FY 2007 President's Budget:	**13.293**	**0.503**	**0.510**	**0.511**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions				
(U) Congressional Rescissions	-0.128			
(U) Congressional Increases		5.300		
(U) PR 07 Core Adjustment				
(U) Reprogrammings	0.084	7.150	79.897	51.676
(U) SBIR/STTR Transfer	-0.365			
(U) Minor Affordability Adjustment	-0.055	-0.049	-0.004	0.004
(U) FY 2008 NAVCOMPT Budget:	**12.829**	**12.904**	**80.403**	**52.191**

CHANGE SUMMARY EXPLANATION:
(U) Funding: See Above.
(U) Schedule: N/A
(U) Technical: N/A

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2007			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Support Arms Systems**					PROJECT NUMBER AND NAME **C2614 FOLLOW-ON TO SMAW**			
COST ($ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013
Project Cost		**0.565**	**0.501**	**3.327**	**8.194**	**0.525**	**0.525**	**0.515**	**0.513**
RDT&E Articles Qty									

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

The Follow-on to SMAW (FOTS) program is comprised of three phases: new launcher, Fire-from-enclosure (FFE) round, and wall breaching round. The FY06-09 effort is to competitely select and qualify a new launcher to replace the existing Mk153 Mod 0 launcher, with production to commence in FY10.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	0.000	0.000	1.982	5.748
RDT&E Articles Qty				

Contractor conducted systems integration and qualification

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	0.419	0.355	0.873	0.892
RDT&E Articles Qty				

Provide engineer and technical support.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	0.068	0.146	0.265	0.480
RDT&E Articles Qty				

Provide government program management / in-house support.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	0.078	0.000	0.207	1.074
RDT&E Articles Qty				

Provided operational test support planning and document preparation and conduct operational testing.

(U) Total $	**0.565**	**0.501**	**3.327**	**8.194**

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	**0603635M Marine Corps Ground Combat/Support Arms Systems**	**C2614 FOLLOW-ON TO SMAW**

(U) PROJECT CHANGE SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009
(U) FY 2007 President's Budget:	**0.493**	**0.503**	**0.510**	**0.511**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions				
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	**0.084**		**2.800**	**7.616**
(U) SBIR/STTR Transfer	**-0.012**			
(U) Minor Affordability Adjustments		**-0.002**	**0.017**	**0.067**
(U) FY 2008 President's Budget:	**0.565**	**0.501**	**3.327**	**8.194**

CHANGE SUMMARY EXPLANATION:

(U) Funding: The SMAW Launcher Replacement program will be initiated as Phase I of the Follow-on-to-SMAW program.
(U) Schedule:
(U) Technical:

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PANMC BLI 147100 Rockets All Types	53.397	20.110	2.146	6.548	4.036	4.882	4.470	4.512	Cont	Cont
PMC BLI 301600 Follow-on to SMAW	0.000	0.000	0.000	0.000	12.184	3.344	9.528	15.767	Cont	Cont

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

FY08-09 acquisition strategy will be to competitely select and qualify a new launcher system to replace the current Mk153 Mod 0 SMAW launcher.

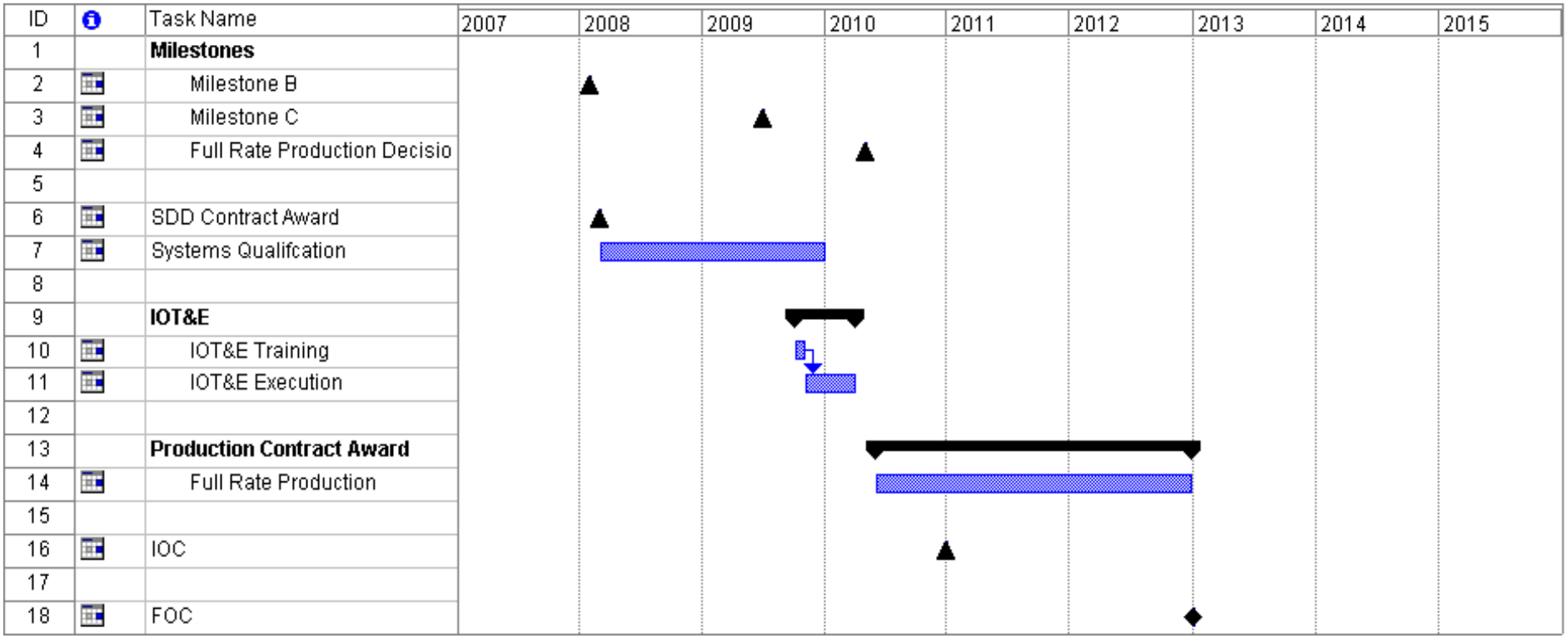
FY10-12 will address post operational testing issues and further conduct evaluation of fire-from-enclosure (FFE) technologies for FY13 integration and qualification in to a new rocket.

(U) E. MAJOR PERFORMERS:

FY08-09
Talley Defense Systems, Mesa, Az
Raytheon Network Centric Systems, McKinney, TX
General Dynamics Armement and Technical Products, Burlington, VT
NSWC, Dahlgren Division, VA

Exhibit R-3 Cost Analysis															DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**			PROGRAM ELEMENT **0603635M Marine Corps Ground Combat/Support Arms Systems**					PROJECT NUMBER AND NAME **C2614 FOLLOW-ON TO SMAW**							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract	
Systems Integration	C/CPFF	TBD						1.982	11/07	5.748	11/08	Cont	Cont		
												Cont	Cont		
												Cont	Cont		
Subtotal Product Dev			**0.000**	**0.000**		**0.000**		**1.982**		**5.748**		**Cont**	**Cont**		
Remarks:															
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract	
Program Mgmt and Eng Support	WR	MCSC, Quantico, VA		0.068	10/05	0.146	10/06	0.265	10/07	0.480	10/09	Cont	Cont		
Engineering and Technical Spt	WR	NSWC, Dahlgren, VA		0.419	10/05	0.355	10/06	0.873	10/07	0.892	10/08	Cont	Cont		
												Cont	Cont		
												Cont	Cont		
Subtotal Support			**0.000**	**0.487**		**0.501**		**1.138**		**1.372**		**Cont**	**Cont**		
Remarks:															
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract	
Operational Testing and Support	WR	MCOTEA, Quantico, VA		0.078	02/06	0.000		0.207	10/06	1.074	10/06	Cont	Cont		
												Cont	Cont		
												Cont	Cont		
Subtotal T&E			**0.000**	**0.078**		**0.000**		**0.207**		**1.074**		**Cont**	**Cont**		
Remarks:															
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract	
Subtotal Management			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**		
Remarks:															
Total Cost			**0.000**	**0.565**		**0.501**		**3.327**		**8.194**		**Cont**	**Cont**		

Exhibit R-4-4a Project Schedule/Detail		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT **0603635M Marine Corps Ground Combat/Support Arms Systems**	PROJECT NUMBER AND NAME **C2614 FOLLOW-ON TO SMAW**



Program Funding Summary (APPN, BLI #, NOMEN)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
(U) RDT&E,N, C2614, Follow-on to SMAW	0.565	0.501	3.327	8.194	0.525	0.525	0.515	0.513	Cont	Cont
(U) PMC, BLI 301600, Follow-on to SMAW	0.000	0.000	0.000	0.000	12.184	3.344	9.528	15.767	Cont	Cont

Exhibit R-4-4a Project Schedule/Detail			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT **0603635M Marine Corps Ground Combat/Support Arms Systems**	PROJECT NUMBER AND NAME **C2614 FOLLOW-ON TO SMAW**	

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestone B			1st Qtr					
Milestone C				2nd Qtr				
Full Rate Production Decision					2nd Qtr			
IOC						1st Qtr		
FOC							4th Qtr	
PANMC BLI 147100 Rockets All Types								

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Support Arms Systems**	PROJECT NUMBER AND NAME **C3132 Joint Light Tactical Vehicle**

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013
Project Cost	**0.000**	**0.000**	**77.076**	**43.997**	**18.020**	**14.647**	**19.950**	**20.692**
RDT&E Articles Qty								

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

The Joint Light Tactical Vehicle (JLTV) is a program for a family of vehicles to replace and/or supplement the current High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) family of vehicles. The JLTV will be designed to address the issues currently being experienced with the HMMWV family. It will possess significantly improved survivability, better power management, increased operational range, and logistics performance/supportability over the HMMWV, as well as the capacity to carry and haul more weight with high reliability, both of which are issues for the HMMWV, particularly with the burden of add-on armor.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**66.707**	**32.293**
RDT&E Articles Qty				
System Design/Developmental Test				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**10.369**	**11.704**
RDT&E Articles Qty				
System Engineering				
(U) Total $	**0.000**	**0.000**	**77.076**	**43.997**

(U) PROJECT CHANGE SUMMARY:	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**
(U) FY 2007 President's Budget:	0.000	0.000	0.000	0.000
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions				
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	0.000	0.000	76.844	43.690
(U) SBIR/STTR Transfer				
(U) Minor Affordability Adjustments			0.232	0.307
(U) FY 2008 President's Budget:	**0.000**	**0.000**	**77.076**	**43.997**

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Support Arms Systems**	PROJECT NUMBER AND NAME **C3132 Joint Light Tactical Vehicle**

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.

(U) Schedule: Initiate JLTV as Program of Record

(U) Technical: Initiate JLTV as Program of Record

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PMC BLI 509500 JLTV	0.000	0.000	0.000	0.000	49.070	139.514	236.848	309.071	Cont	Cont
(U) Related RDT&E:										
RDT&E C2930 Pre Phase A Activities	0.822	3.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.626

(U) D. ACQUISITION STRATEGY:

Anticipate that this program will be pursued under an Evolutionary Acquisition, Incremental Development acquisition strategy. The USMC program office, as part of the JLTV Program Office (JPO), will work with the Army to conduct concept and technology refinement activities to reduce overall program risk and transition technologies for integration into the Joint Light Tactical Vehicle (JLTV). The JPO will conduct analyses, trade studies, concept designs, modeling and simulation, and develop component/system mockups for the JLTV family of vehicles. The JPO will also work with Office of Naval Research (ONR) and the Army's Research Development and Engineering Command (RDECOM) Future Tactical Truck System, Advance Concept Technology Demonstration (ACTD) for future JLTV technologies that could be incorporated into the JLTV at Increment 1 or as a preplanned product improvement under follow-on increments. After Milestone B, the Program Office will release an Request for Proposal (RFP) for full and open competition award of System Development and Demonstration (SDD) contract(s). Up to 2 contracts may be awarded based on affordability. The competing vendors will develop prototype vehicles for Government Developmental Testing and Initial Operational

Prior to Milestone C, the program will down select to (1) contractor. This contractor will then go into operational testing and Low Rate Initial Production (LRIP). MS C/LRIP Decision will be in FY 10; Full Rate Production Decision will be in FY11; Initial Operational Capability is planned for FY12.

(U) E. MAJOR PERFORMERS:

TBD

Exhibit R-3 Cost Analysis

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	**0603635M Marine Corps Ground Combat/Support Arms**	**C3132 Joint Light Tactical Vehicle**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
System Design/DT	TBD	TBD, MCSC, Quantico	0.000	0.000		0.000		66.707	Dec-07	32.293	Nov-08	Cont	Cont	TBD
System Engineering	TBD	TBD, MCSC, Quantico	0.000	0.000		0.000		8.269	Nov-07	9.204	Nov-08	Cont	Cont	TBD
Logistics Development	TBD	TBD, MCSC, Quantico	0.000	0.000		0.000		2.100	Nov-07	2.500	Nov-08	Cont	Cont	TBD
Subtotal Product Dev			**0.000**	**0.000**		**0.000**		**77.076**		**43.997**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
												Cont	Cont	
												Cont	Cont	
Subtotal Support			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
												Cont	Cont	
												Cont	Cont	
												Cont	Cont	
Subtotal T&E			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
Subtotal Management			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**	

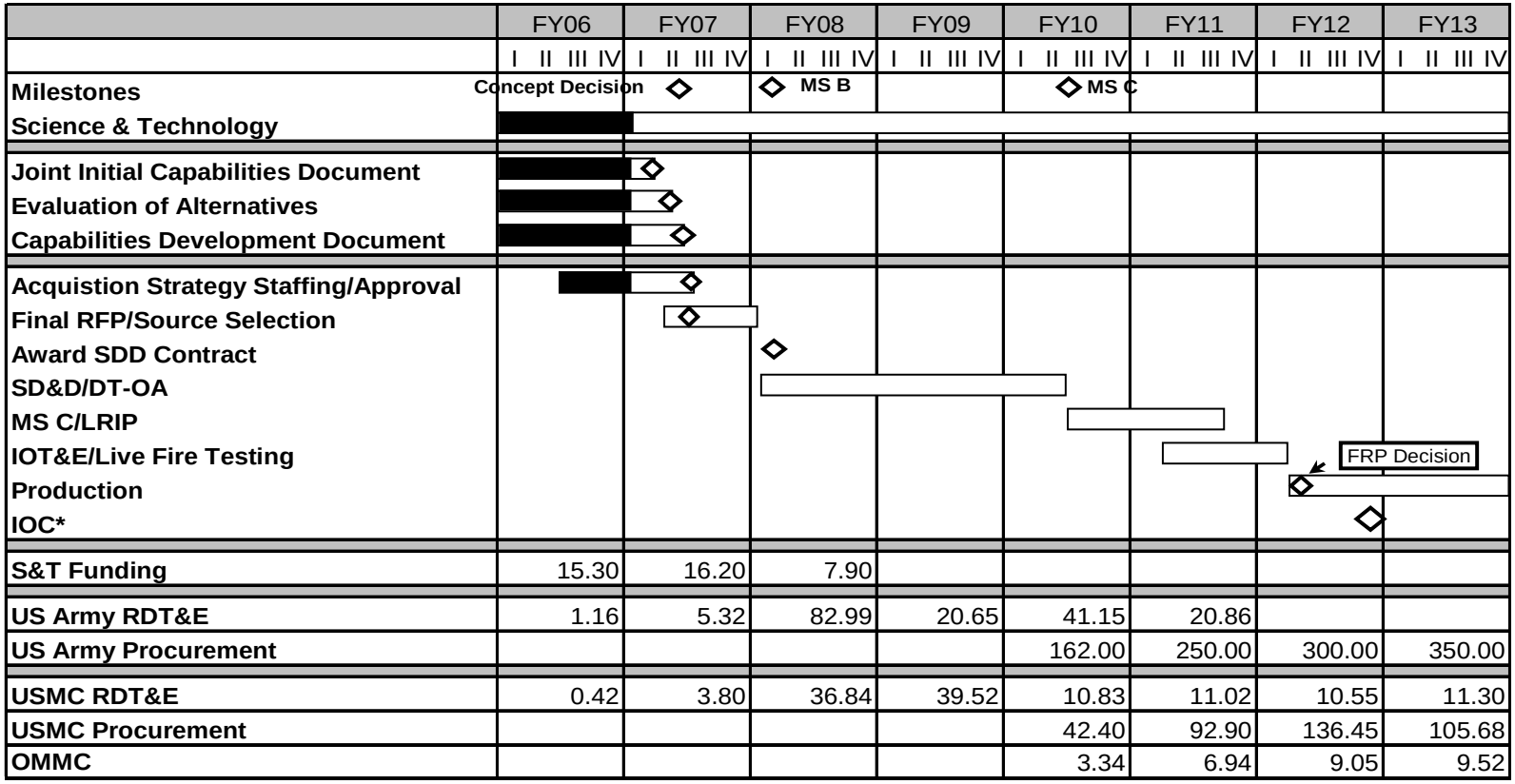
Remarks:

Total Cost			**0.000**	**0.000**		**0.000**		**77.076**		**43.997**		**Cont**	**Cont**	

Exhibit R-4-4a Project Schedule/Detail

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	**0603635M Marine Corps Ground Combat/Support Arms Systems**	**C3132 Joint Light Tactical Vehicle**



	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
S&T Funding	15.30	16.20	7.90					
US Army RDT&E	1.16	5.32	82.99	20.65	41.15	20.86		
US Army Procurement					162.00	250.00	300.00	350.00
USMC RDT&E	0.42	3.80	36.84	39.52	10.83	11.02	10.55	11.30
USMC Procurement					42.40	92.90	136.45	105.68
OMMC					3.34	6.94	9.05	9.52

Program Funding Summary (APPN, BLI #, NOMEN)	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**To Compl**	**Total Cost**
(U) RDT&E,N			77.076	43.997	18.020	14.647	19.950	20.692	CONT	Cont
(U) PMC BLI 5095					49.070	139.514	236.848	309.071	CONT	Cont

Exhibit R-4-4a Project Schedule/Detail

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	**0603635M Marine Corps Ground Combat/Support Arms Systems**	**C3132 Joint Light Tactical Vehicle**

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Joint Initial Capabilities Document		1Q						
Evaluation of Alternatives		2Q						
Capabilities Development Document		2Q						
MS B			1Q					
SD&D			1Q		3Q			
DT/OA				2Q	2Q			
MS C/LRIP Award					2Q			
IOT&E/LFT&E						2Q	2Q	
FRP Decision							2Q	
IOC							4Q	
FOC							Beyond FYDP →	

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/Validation	**0603635M Marine Corps Ground Combat/Support Arms Systems**	**C9999 CONGRESSIONAL ADDS**

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013
Project Cost	**8.619**	**5.280**	**0.000**	**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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**4.023**	**1.345**	**0.000**	**0.000**
RDT&E Articles Qty				

Anti-Sniper Infrared Target System (ASITS) C9873: Development, exploitation and enhancement of capabilities of Anti-Sniper Infrared Targeting System (ASITS).

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.341**	**1.943**	**0.000**	**0.000**
RDT&E Articles Qty				

Marine Expeditionary Rifle Squad C9874: Continued research and development for System Integration Capability and to develop prototype working integration issues with the development of combat gear.

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.244**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

MOD & Simulation Warhead Interaction C9875: - To develop a modeling and simulation tool to assess specific warhead effectiveness against a variety of structures and fortifications. This M&S tool will be used in the development of various fuzes and fuze designs to optimize effect on target and to develop multi-purpose fuzing and potentially tunable/selectable fuzing.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.053**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Neutral Fac Threats W/Novel Techn C9876: - Continue research and development of new and novel technologies designed to protect US National Security by providing military, law enforcement and emergency responders with enhanced operational technologies that are life preserving, environmentally friendly and fiscally responsible.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.958**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Urban Terrain Target Designator C9877: - is a day/night image intensifying sight with a 2.5Km to 3.5Km laser ranging system that can convert the known range into a digital symbol. The system is small and portable, can be mounted on a standard M16A2 rail system, is ruggedized, Bluetooth and PRC adaptable, and provides GPS ten digit grid accuracy or equivalent Lat/Long with elevation and sender to receiver range.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**0.996**	**0.000**	**0.000**
RDT&E Articles Qty				

MSIMP-CH Marine Sensor Int C9A07: The objective of the effort is to develop the new concept/technology based on the Marine Corps Systems Command SBIR contract with Eureka Aerospace for “through-the-wall” imaging capabilities. Successful implementation will provide the capability for high-resolution 3-D visualization of the objects, including people, weapons and other materiel, on the other side of the wall using extremely broadband microwave technology. The requirement is to be able to see who and what is inside a building prior to Marines entering. The system will also be able to spot booby traps and exit routes for the enemy. The system will also help to validate that the Marines are attacking the correct building.

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Support Arms Systems**			PROJECT NUMBER AND NAME **C9999 CONGRESSIONAL ADDS**	
COST ($ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost		**0.000**	**0.996**	**0.000**	**0.000**
RDT&E Articles Qty					
MOLDABLE FABRIC ARMOR C9A08: This Congressional Add funds moldable fabric armor which is a lightweight, easily transportable and versatile armor supplement.					
(U) Total $		**8.619**	**5.280**	**0.000**	**0.000**

(U) PROJECT CHANGE SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009
(U) FY 2007 President's Budget:	**9.000**	**0.000**	**0.000**	**0.000**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions	**-0.090**			
(U) Congressional Rescissions				
(U) Congressional Increases		**5.300**		
(U) Reprogrammings				
(U) SBIR/STTR Transfer	**-0.252**			
(U) Minor Affordability Adjustments	**-0.039**	**-0.020**		
(U) FY 2008 President's Budget:	**8.619**	**5.280**	**0.000**	**0.000**

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
	0.000	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

(U) E. MAJOR PERFORMERS:

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification										DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Cost to Complete	Total Program
Total PE Cost		**33.924**	**24.315**	**83.361**	**114.986**	**93.609**	**77.502**	**78.961**	**76.939**	**Continuing**	**Continuing**
0377/Joint Service EOD Systems		**23.291**	**15.025**	**14.967**	**11.739**	**13.365**	**12.787**	**11.543**	**11.808**	**Continuing**	**Continuing**
1317/EOD Diving System		**2.263**	**2.690**	**2.770**	**2.767**	**3.294**	**3.503**	**2.929**	**2.985**	**Continuing**	**Continuing**
3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)		**0.000**	**0.468**	**61.392**	**96.896**	**69.920**	**55.259**	**57.842**	**58.755**	**Continuing**	**Continuing**
4023/VSW MCM/ Force Protection UUV		**8.370**	**6.132**	**4.232**	**3.584**	**7.030**	**5.953**	**6.647**	**3.391**	**Continuing**	**Continuing**
Quantity of RDT&E Articles		**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**		**Various**

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

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. This program also provides force protection of all military services against Radio Controlled Improvised Explosive Devices (RCIED) to prevent initiation. The Navy has been designated single manager for Joint Counter RCIED Electronic Warfare (JCREW), requiring RDT&E to develop capabilities that meet joint requirements.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603654N/Joint Service EOD Development

(U) B. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY07 Pres Controls)	33.898	24.467	25.832	24.881
Current BES/President's Budget (FY08 Pres Controls)	33.924	24.315	83.361	114.986
Total Adjustments	0.026	-0.152	57.529	90.105
Summary of Adjustments				
Congressional Undistributed Reduction	0.026	-0.152	0.000	0.000
Program Adjustments	0.000	0.000	57.529	90.105
Subtotal	0.026	-0.152	57.529	90.105

(U) Schedule:

Joint Service EOD Systems: OPNAV and the Joint Service EOD Program Board directed that the JLONS program enter a Concept Refinement/Technology Development phase to reduce programmatic and technical risk. The JLONS program schedule is adjusted accordingly. Due the evolving IED threat faced by Joint Service EOD technicians, the Transmitter, Countermeasure (TCM) AN/PLT-XXX (formerly Classified III) acquisition strategy has incorporated a block upgrade to insert capabilities to counter the emerging IED threats. The joint requirements for the EOD Decision Support System (DSS) have been established by the users from all four Services, the resulting CDD is currently in the Joint Capabilities and Integration Development Systems (JCIDS) process, and the schedule has been revised to reflect these requirements. Joint Service IED Countermeasures (JS IED CM) program moved to Project 3177 beginning in FY07.

EOD Diving System: Underwater Imaging System (UIS PIP) production decision moved from 3rd QTR FY10 to 4th QTR FY10. Supports Continuous Improvement program through 4th QTR FY13. Diver Hull Inspection Navigational System production decision moved from 2nd QTR FY07 to 4th QTR FY07 to support additional suitability and effectiveness testing. An increased production quantities from 119 systems to 154 systems extends production cycle to 4th QTR FY13. Supports Continuous Improvement program through 4th QTR FY13. Diver A independent study of Analysis of Alternatives determined the best option to provide a Diver Amphibious Neutralization system (DANS) capability to the fleet would be a second spiral to Acoustic Firing System (AFS PIP). DANS changed to Acoustic Firing Radio Frequency PIP. The production for Acoustic Firing System Radio Frequency has continued from 4th QTY FY08 to 1st QTR FY09, due to an Indefinite Delivery, Indefinite Quantity (IDIQ), contract for multiple year productions to support expendable end items.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603654N/Joint Service EOD Development	

(U) Schedule:

VSW MCM /Force Protection UUV : Spiral CIP (Continuous Improvement Programs) continues through 4th QTR FY13.

(U) Technical:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**23.291**	**15.025**	**14.967**	**11.739**				
RDT&E Articles Qty	**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).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	0377/Joint Service EOD Systems	

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.287	7.663	7.950	6.239
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Joint Service EOD systems to detect, identify and provide knowledge management for UXO and IED threats. Systems include EOD Decision Support System (EOD DSS) and EOD Future Radiographic System (FRS). Also, conduct Analysis of Alternatives studies and conduct evaluations of Commercial/Non-Developmental Items (C/NDI EOD tools/equipment).

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.342	4.601	3.967	4.000
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Joint Service EOD systems to access, disrupt and neutralize UXO and IED threats. Systems include the Joint Laser Ordnance Neutralization System (JLONS), Electronic Safe/Arm Fuze (ESAF)-IED and Improved Remote Fuze Disassembly Kit, and the Disposable Firing System. Also, conduct Analysis of Alternatives studies and conduct evaluations of Commercial/Non-Developmental Item (C/NDI) EOD tools/equipment.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.594	0.578	0.500	0.500
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Joint Service EOD Robotic Systems including the EOD Man Transportable Robotics System (MTRS) project. Also conduct improvement programs to EOD Robotic Systems.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	0377/Joint Service EOD Systems	

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.500	2.183	2.550	1.000
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Joint Service EOD systems to counter current and emerging IED threats. Systems include Transmitter Countermeasures (TCM), AN/PLT-XXX (formerly know as Classified III). Alsc conduct continuous improvement programs to counter evolving IED threats.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	9.568	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW) systems (formerly Joint Service Improvided Explosive Device Countermeasures (JS IED CM). Moves to project 3177 beginning in FY07.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	0377/Joint Service EOD Systems	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN 5509	12496	13202	6209	2800						

(Funds listed in section D. are only for cost code VN075, EOD Equipment/Systems.)

(U) D. 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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTD, IH, MD	84.817	10.310	10/05	4.425	10/06	6.500	10/07	4.642	10/08	Continuing	Continuing	
Software Development	WR	EODTD, IH, MD	5.879	5.400	10/05	4.455	10/06	1.736	10/07	1.200	10/08	Continuing	Continuing	
ILS	WR	EODTD, IH, MD	39.070	0.850	10/05	0.750	10/06	1.250	10/07	1.000	10/08	Continuing	Continuing	
Subtotal Product Development			129.766	16.560		9.630		9.486		6.842		0.000	172.284	

Remarks:

Program Management Support	C/CPFF	EDO, Alexandria, VA	3.460										3.460	
Program Management Support	C/CPFF	EDO, Alexandria, VA	0.645	0.600	10/05	0.600	10/06	0.650	10/07	0.500	10/08	Continuing	Continuing	
Subtotal Support			4.105	0.600		0.600		0.650		0.500		0.000	6.455	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603654N/Joint Service EOD Developme

PROJECT NUMBER AND NAME: 0377/Joint Service EOD Systems

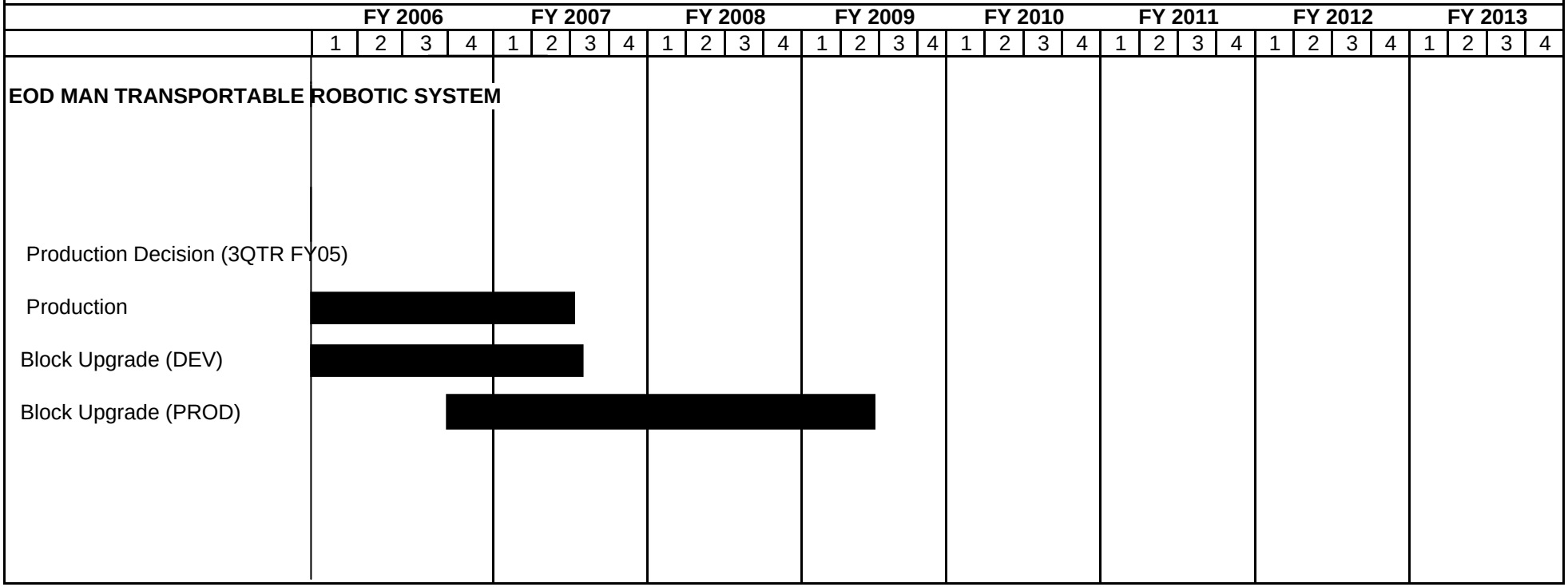
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	EODTD, IH, MD	61.147	2.200	10/05	1.400	10/06	1.500	10/07	1.800	10/08	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	EODTD, IH, MD	8.245			0.538	10/06	0.550	10/07	0.200	10/08	Continuing	Continuing	N/A
Subtotal T&E			69.392	2.200		1.938		2.050		2.000		0.000	77.580	
Remarks:														
Program Management Support	WR	EODTD, IH, MD	5.271	0.600	10/05	0.625	10/06	0.650	10/07	0.650	10/08	Continuing	Continuing	N/A
Miscellaneous	Various	Various	5.669	3.331	10/05	2.232	10/06	2.131	10/07	1.747	10/08	Continuing	Continuing	N/A
Subtotal Management			10.940	3.931		2.857		2.781		2.397		Continuing	Continuing	
Remarks:														
Total Cost			214.203	23.291		15.025		14.967		11.739		Continuing	Continuing	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart

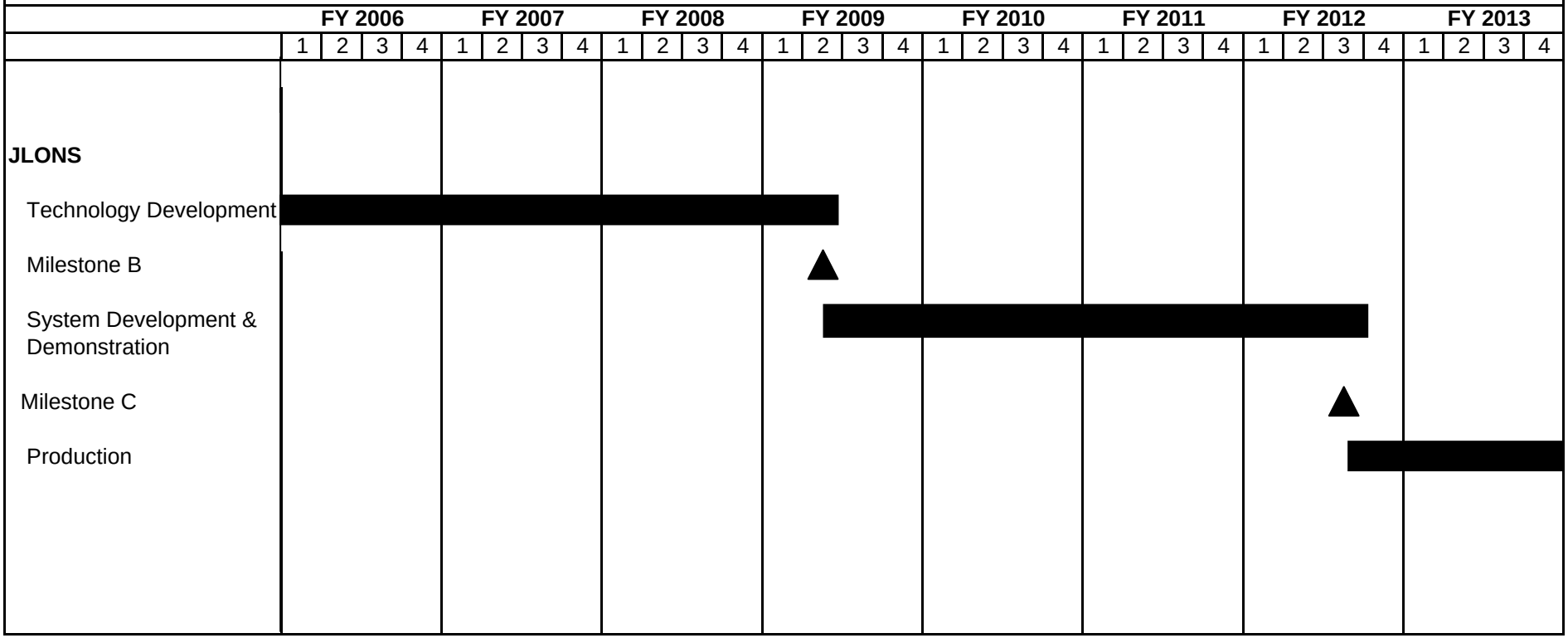


CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart

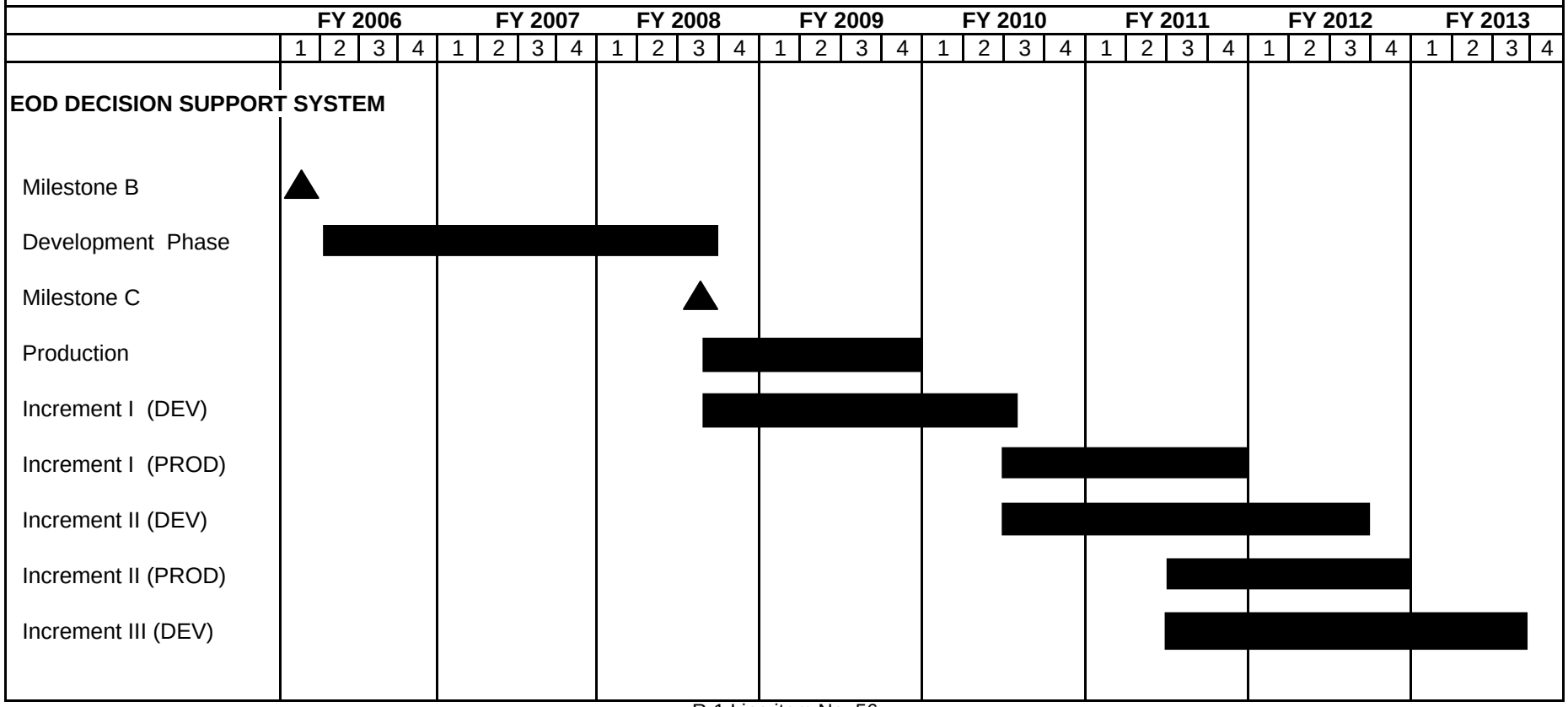


CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart

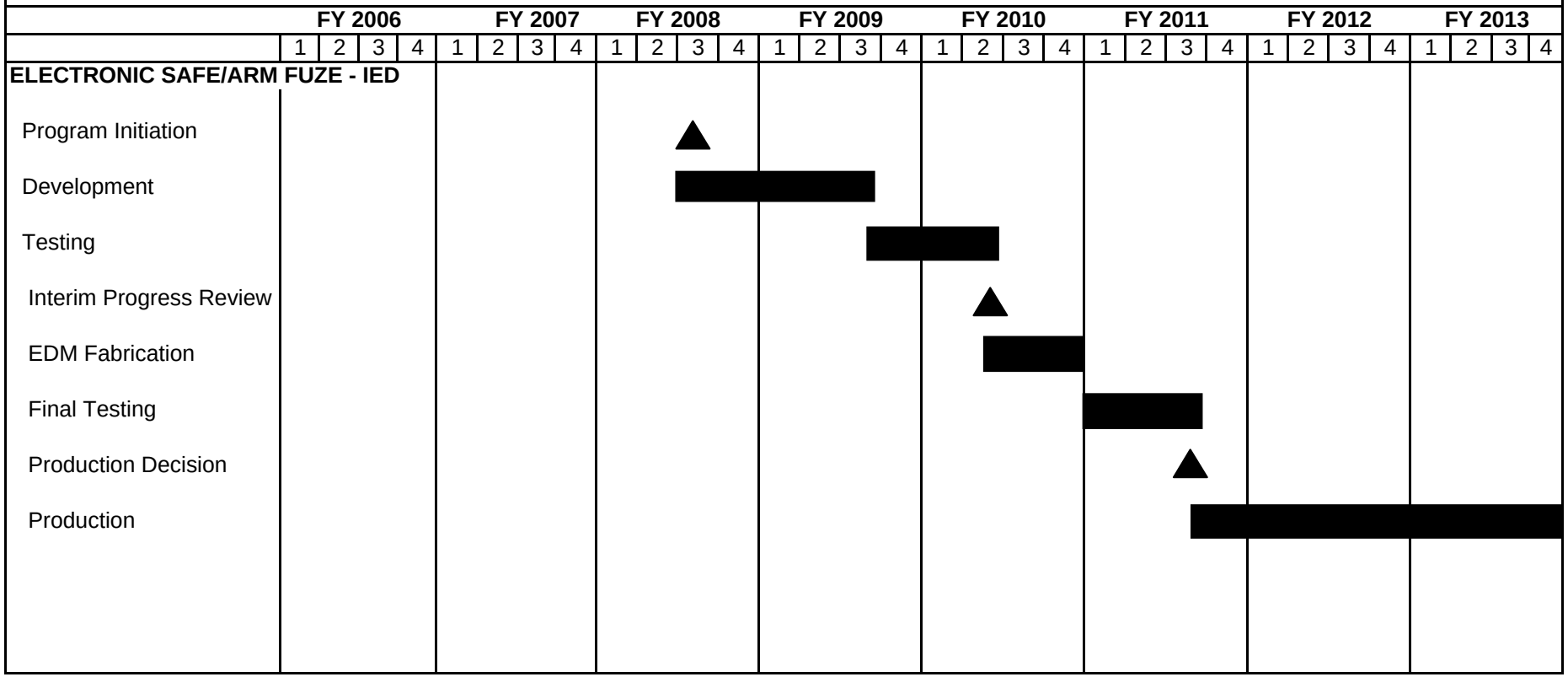


CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart



CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification			DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart

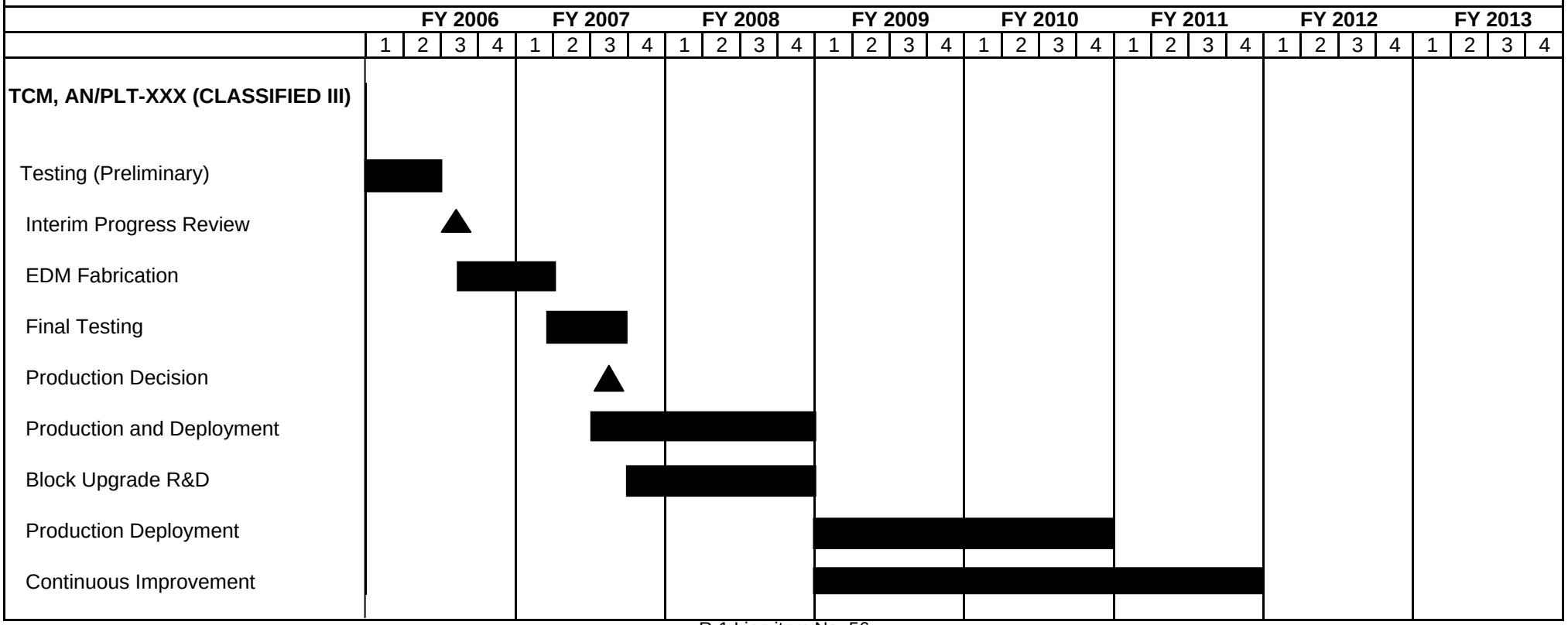
	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JOINT SERVICE IED CM																																
Analysis of Alternatives (AOA)																																

CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart

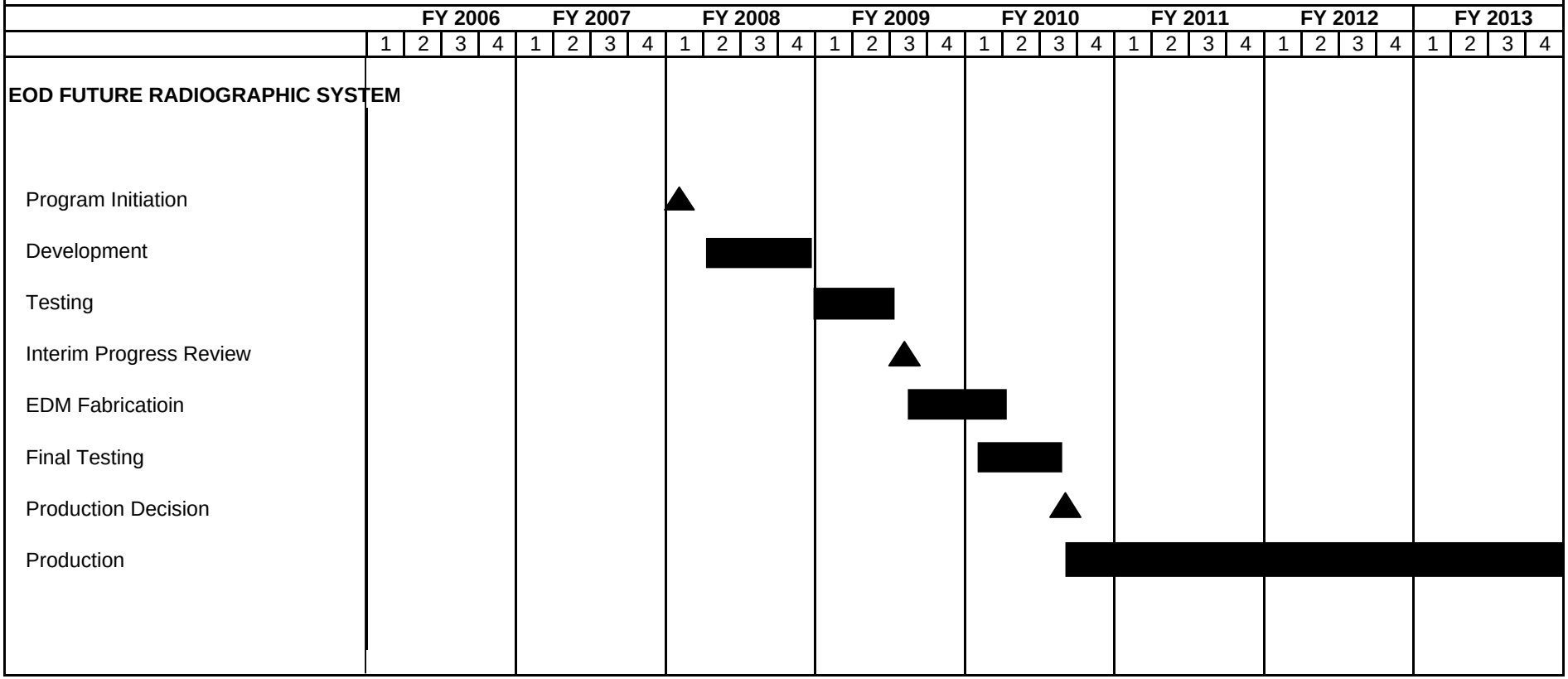


CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2007**
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; 0377 Joint Service EOD Systems

RDT&E Milestone Chart



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems			
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
EOD MAN TRANSPORTABLE ROBOTIC SYSTEM								
Production	1Q-4Q	1Q-2Q						
Block Upgrade (DEV)	1Q-4Q	1Q-3Q						
Block Upgrade (PROD)	4Q	1Q-4Q	1Q-4Q	1Q-2Q				
JLONS								
Technology Development	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q				
Milestone B				2Q				
System Development & Demonstration				2Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q	
Milestone C							3Q	
Production							3Q-4Q	1Q-4Q
EOD DECISION SUPPORT SYSTEM								
Milestone B	1Q							
Development Phase	2Q-4Q	1Q-4Q	1Q-3Q					
Milestone C			3Q					
Production			3Q-4Q	1Q-4Q				
Increment I (DEV)			3Q-4Q	1Q-4Q	1Q-3Q			
Increment I (PROD)					3Q-4Q	1Q-4Q		
Increment II (DEV)					3Q-4Q	1Q-4Q	1Q-3Q	
Increment II (PROD)						3Q-4Q	1Q-4Q	
Increment III (DEV)						3Q-4Q	1Q-4Q	1Q-3Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems			
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
ELECTRONIC SAFE/ARM FUZE-IED								
Program Initiation			3Q					
Development			3Q-4Q	1Q-3Q				
Testing				3Q-4Q	1Q-2Q			
Interim Progress Review					2Q			
EDM Fabrication					2Q-4Q			
Final testing						1Q-3Q		
Production Decision						3Q		
Production						3Q-4Q	1Q-4Q	1Q-4Q
JOINT SERVICE IED CM								
Analysis of Alternatives (AOA) Study	1Q-3Q							

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME 0377/Joint Service EOD Systems			
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
TCM, AN/PLT-XXX (CLASSIFIED III)								
Testing (Preliminary)	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					
Block Upgrade R&D		4Q	1Q-4Q					
Production Deployment				1Q-4Q	1Q-4Q			
Continuous Improvement				1Q-4Q	1Q-4Q	1Q-4Q		
EOD FUTURE RADIOGRAPHIC SYSTEM								
Program Initiation			1Q					
Development			2Q-4Q					
Testing				1Q-3Q				
Interim progress Review				3Q				
EDM Fabrication				3Q-4Q	1Q-2Q			
Final Testing					1Q-3Q			
Production Decision					3Q			
Production					3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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)	FY2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.263**	**2.690**	**2.770**	**2.767**				
RDT&E Articles Qty	**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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.360	0.551	0.478	0.460
RDT&E Articles Quantity	Various	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. Affirm Diver Equipment requirements Compliance.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.500	0.350	0.860	0.622
RDT&E Articles Quantity	Various	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 EOD Tools and Equipment for Maritime Homleand Defence (EODMHLD) for above and below water neutralization of mines to support EOD & NSCT-1 Neutralization missions.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.250	0.250	0.953	1.319
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Explosive Ordnance Disposal Tools and Equipment for Mine Countermeasures missions and neutralization of mines to support EOD and NSCT-1. Develop technology refresh improvements to the Underwater Imaging System (UIS), and to detect Buried Mines for Neutralization and Acoustic Firing System (AFS).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.153	1.539	0.479	0.366
RDT&E Articles Quantity	Various	Various	Various	Various

Develop a New Underwater Breathing Apparatus (NUBA) (formally known as Advanced Underwater Breathing Apparatus (UBA)) to improve underwater breathing capabilites. Develop a Diver Hull Inspection Navigation System to improve current capabilities in existing hull search operations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN 0975	6,306	4,583	3,934	4,531						
PANMC 0340		1,860	1,690							

(U) D. 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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603654N/Joint Service EOD Development

PROJECT NUMBER AND NAME: 1317/EOD Diving Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	EODTD, IH, MD	35.286	0.441	10/05	0.800	10/06	0.800	10/07	0.801	10/08	Continuing	Continuing	
Software Development	WX	EODTD, IH, MD	1.938	0.254	10/05	0.500	10/06	0.500	10/07	0.500	10/08	Continuing	Continuing	
Systems Engineering	WX	EODTD, IH, MD	8.228									0.000	8.228	
ILS	WX	EODTD, IH, MD	11.916									0.000	11.916	
Systems Engineering	WX	NSWC, PC	0.000	0.190	10/05	0.190	10/06	0.190	10/07	0.190	10/08	Continuing	Continuing	
Systems Engineering	WX	SPAWAR	0.000	0.400	10/05	0.200	10/06	0.400	10/07	0.400	10/08	Continuing	Continuing	
Subtotal Product Development			57.368	1.285		1.690		1.890		1.891		0.000	64.124	
Remarks:														
Program Management Support	C/CPFF	EDO, Alex, VA	3.537									0.000	3.537	
Program Management Support	C/CPFF	EDO, Alex, VA	0.623	0.350	10/05	0.258	10/06	0.380	10/07	0.390	10/08	Continuing	Continuing	
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Award Fees														
Subtotal Support			4.160	0.350		0.258		0.380		0.390		0.000	5.538	
Remarks:														

CLASSIFICATION:

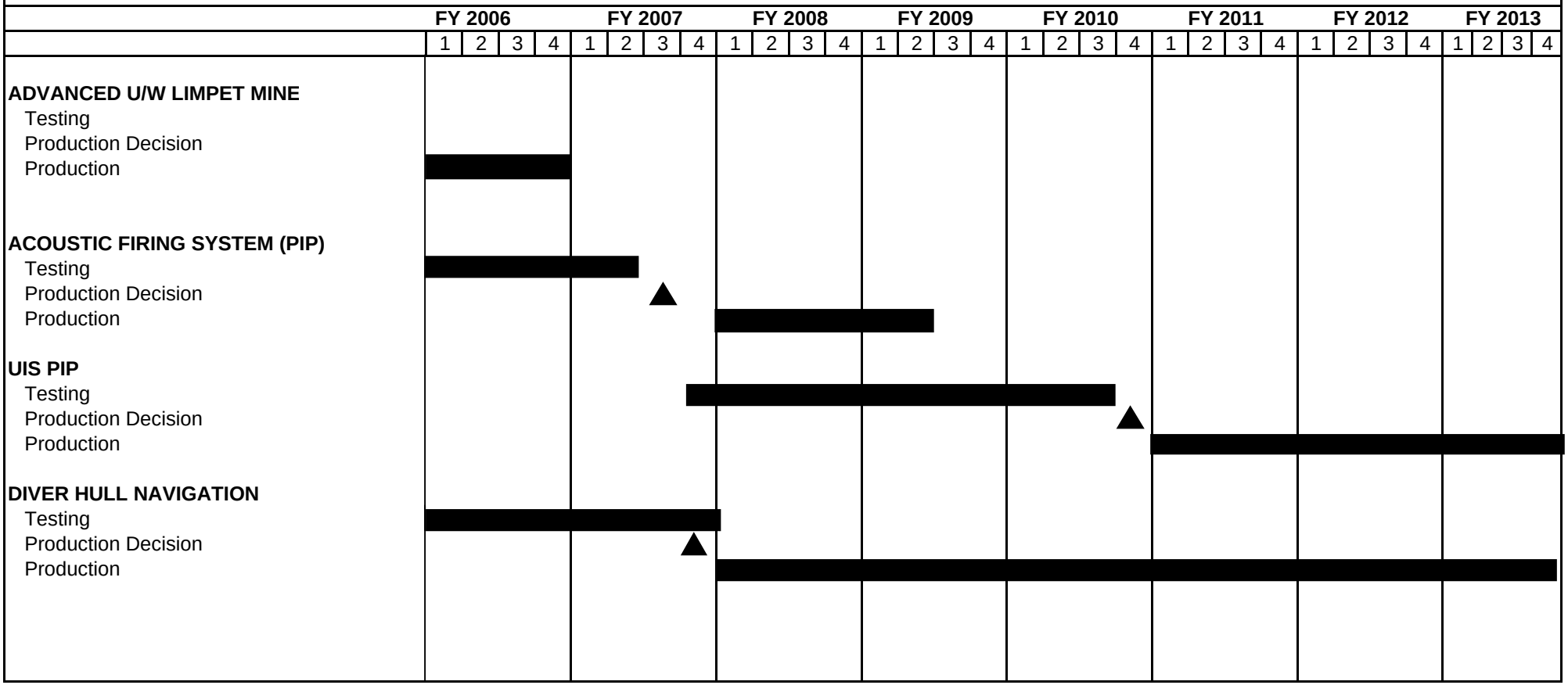
Exhibit R-3 Cost Analysis (page 2)													DATE:	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 1317/EOD Diving Systems								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	EODTD, IH, MD	4.167	0.050	10/05	0.050	10/06	0.006	10/07	0.070	10/08	Continuing	Continuing	
Operational Test & Evaluation	WX	EODTD, IH, MD	1.560										1.560	
Subtotal T&E			5.727	0.050		0.050		0.006		0.070		0.000	5.903	
Remarks:														
Program Management Support	WX	EODTD, IH, MD	7.138	0.275	10/05	0.360	10/06	0.375	10/07	0.290	10/08	Continuing	Continuing	
Miscellaneous	WX	Various	5.928	0.303	10/05	0.332	10/06	0.119	10/07	0.126	10/08	Continuing	Continuing	
Subtotal Management			13.066	0.578		0.692		0.494		0.416		0.000	15.246	
Remarks:														
Total Cost			80.321	2.263		2.690		2.770		2.767		0.000	90.811	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND NUMBE **JT Service EOD Dev 0603654N**	PROJECT NAME AND NUMBER 1317/EOD Diving Systems

0603654N Joint Service EOD Development; 1317 EOD Diving Systems

RDT&E Milestone Chart

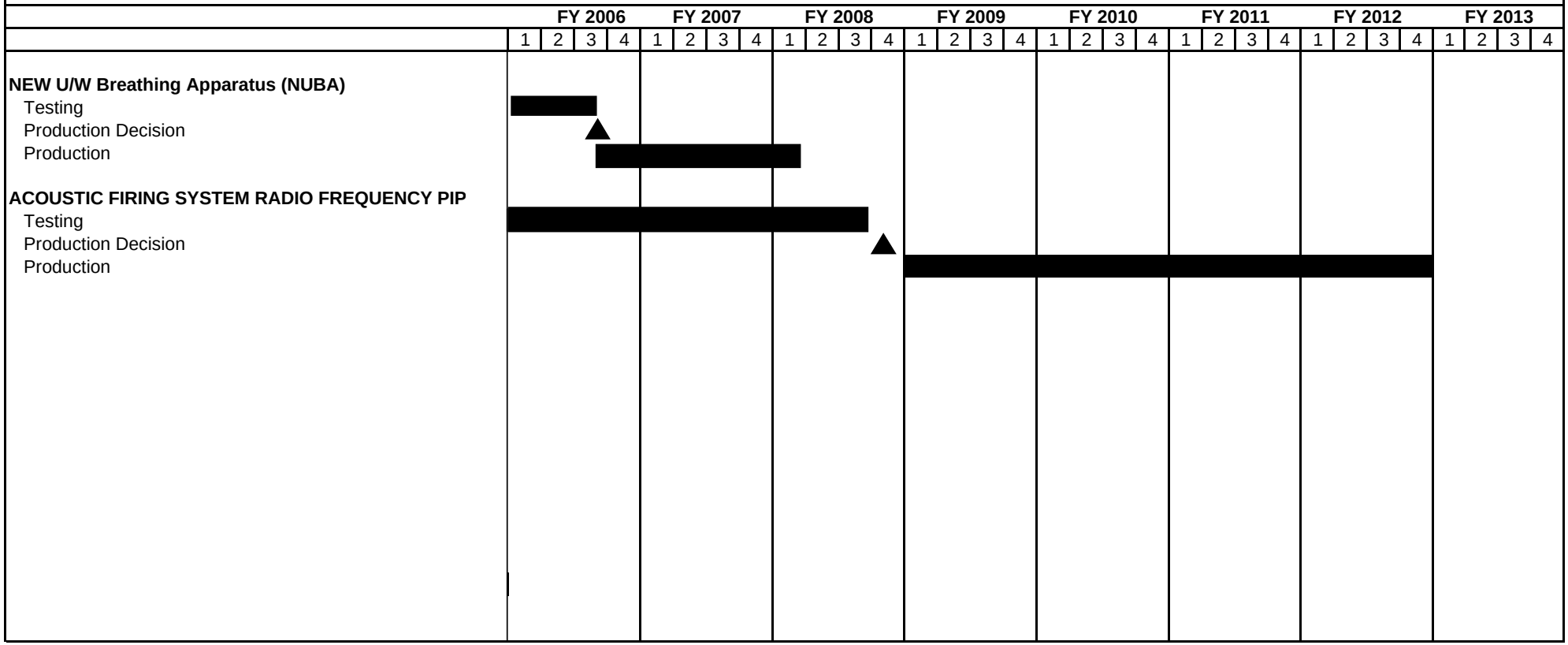


CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND **JT Service EOD Dev 0603654N**	PROJECT NAME AND NUMBER 1317/EOD Diving Systems

0603654N Joint Service EOD Development; 1317 EOD Diving Systems

RDT&E Milestone Chart



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654/Joint Service EOD Development				PROJECT NUMBER AND NAME 1317/EOD Diving Systems			
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
ADVANCED U/W LIMPET MINE								
Testing								
Production Decision								
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-3Q			
Production Decision					4Q			
Production						1Q-4Q	1Q-4Q	1Q-4Q
DIVER HULL NAVIGATION								
Testing	1Q-4Q	1Q-4Q						
Production Decision		4Q						
Production			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654/Joint Service EOD Development				PROJECT NUMBER AND NAME 1317/EOD Diving Systems			
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
NEW U/W BREATHING APPARATUS (NUBA)								
Testing	1Q-3Q							
Production Decision	3Q							
Production	3Q-4Q	1Q-4Q	1Q					
ACOUSTIC FIRING SYSTEM RADIO FREQENCY PIP								
Testing	1Q-4Q	1Q-4Q	1Q-3Q					
Production Decision			4Q					
Production				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME 3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**0.468**	**61.392**	**96.896**				
RDT&E Articles Qty	**Various**	**Various**	**Various**	**Various**				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides for the research , development, for all military services against Radio Controlled Improvised Explosive Devices (RCIED) to prevent initiation. Navy has been designated single manager for Joint Counter RCIED Electronic Warfare (JCREW), requiring RDT&E to develop capabilities that meet joint requirements. CREW spiral development to make rapid improvements to performance, supportability and affordability. Utilize Joint requirements to provide a system of systems approach for a suite of equipment for mounted, dismounted and fixed site operations.

* JCREW Spirals 3.1 and 3.2 are interim solutions funded by the Joint IED Defeat Organization (OSD).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME 3177/Joint Counter Radio Controlled Improvised Explosive Device
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Electronic Warfare (JCREW)

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.468	61.392	96.896
RDT&E Articles Quantity	Various	Various	Various	Various

Initiate the development of a Joint CREW system of systems for mounted, dismounted and fixed cite operations for all four services. Develop improvements for the Convoy Planning Tool.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

(U) D. 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 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. Procurements across the services will be combined to gain quantity discounts.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)													DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development		TBD	0.000					27.000	10/07	29.000	10/08	Continuing	Continuing	
Software Development		Various	0.000					1.500	10/07	3.000	10/08	Continuing	Continuing	
Systems Engineering		Various	0.000			0.250	12/06	2.500	10/07	8.429	10/08	Continuing	Continuing	
ILS		Various	0.000					1.500	10/07	1.500	10/08	Continuing	Continuing	
Subtotal Product Development			0.000			0.250		32.500		41.929			Continuing	
Remarks:														
Program Management Support		Various	0.000					0.850	10/07	4.250	10/08	Continuing	Continuing	
Software Support		Various	0.000					0.250	10/07	0.250	10/08			
Training Development		Various	0.000					2.500	10/07	3.000	10/08	Continuing	Continuing	
Integrated Logistics Support		Various	0.000					9.742	10/07	18.497	10/08	Continuing	Continuing	
Configuration Management		Various	0.000					0.500	10/07	1.750	10/08	Continuing	Continuing	
Technical Data		Various	0.000					0.750	10/07	1.500	10/08	Continuing	Continuing	
GFE		Various	0.000											
Award Fees													Continuing	
Subtotal Support			0.000			0.000		14.592		29.247		0.000	Continuing	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)

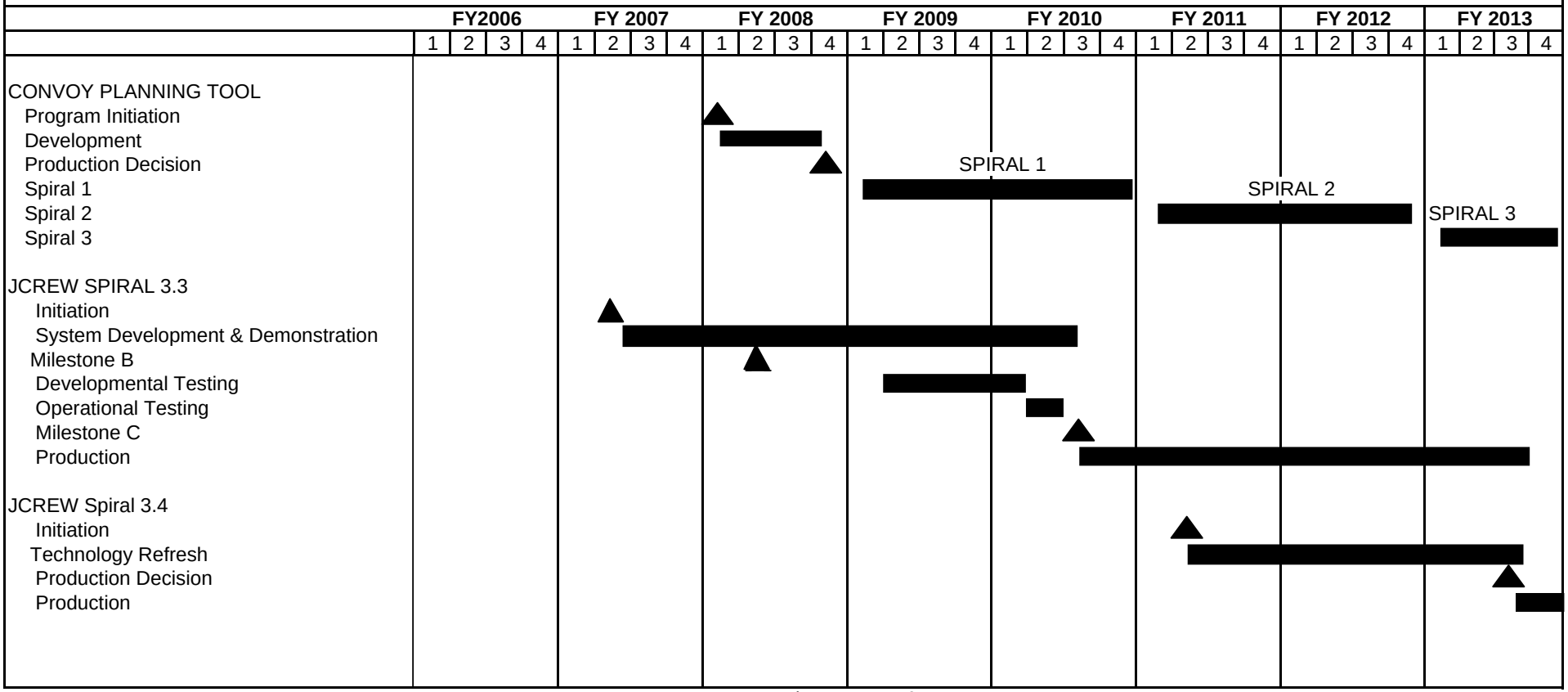
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		Various	0.000					12.550	10/07	20.470	10/08	Continuing	Continuing	
Operational Test & Evaluation		Various	0.000											
Subtotal T&E			0.000			0.000		12.550		20.470		0.000	Continuing	
Remarks:														
Program Management Support		Various	0.000			0.170	12/06	1.500	10/07	3.500	10/08	Continuing	Continuing	
Miscellaneous		Various	0.000			0.048	12/06	0.250	10/07	1.750	10/08	Continuing	Continuing	
Subtotal Management			0.000			0.218		1.750		5.250		0.000	Continuing	
Remarks:														
Total Cost			0.000			0.468		61.392		96.896		0.000	Continuing	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND **JT Service EOD Dev 0603654N**	PROJECT NAME AND NUMBER 3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfar (JCREW)

0603654N Joint Service EOD Development; 3177 Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)

RDT&E Milestone Chart



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654/Joint Service EOD Development				PROJECT NUMBER AND NAME 3177/Joint Counter Radio Controlled Improvised Explosive Device Electronic Warfare (JCREW)			
	FY2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Convoy Planning Tool								
Program Initiation			1Q					
Development			1Q-4Q					
Production Decision			4Q					
Spiral 1				1Q-4Q	1Q-4Q			
Spiral 2						1Q-4Q	1Q-4Q	
Spiral 3								1Q-4Q
JCREW Spiral 3.3								
Initiation		2Q						
System Development & Demonstration		2Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q			
Milestone B			2Q					
Developmental Testing				2Q-4Q	1Q			
Operational testing					2Q			
Milestone C					3Q			
Production					3Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q
JCREW SPIRAL 3.4								
Initiation								
Technology Refresh						2Q		
Production Decision						2Q-4Q	1Q-4Q	1Q-3Q
Production								3Q
								3Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**8.370**	**6.132**	**4.232**	**3.584**				
RDT&E Articles Qty	**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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	4023/EOD VSW MCM/Force Protection UUV

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	8.370	6.132	4.232	3.584
RDT&E Articles Quantity	Various	Various	Various	Various

This program supports development, testing and Fleet approval for evolving generations of small affordable unmanned underwater vehicles, support equipment, and common operator interface systems to address validated requirements in support of Explosive Ordnance Disposal and Naval Special Clearance Team mission areas. Mission areas include: open and confined areas, hulls, piers and pilings to search, classify, map, re-acquire, identify, and neutralize mines and underwater improvised explosive devices.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	4023/EOD VSW MCM/Force Protection UUV	

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN 0975	4069	7653	6467	3577						

(Funds listed in section C. are under cost code UQ034, VSW/EOD UUV, Magneto Inductive Signaling Device, and UUV HULS PIP)

(U) D. 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 Search Classify Map (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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)												DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME 4023/EOD VSW MCM/Force Protection UUV								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WX	EODTD, IH, MD	7.215	2.819	10/05	1.913	10/06	1.313	10/07	1.094	10/08	Continuing	Continuing	
Systems Engineering	WX	EODTD, IH, MD	3.169	2.849	10/05	1.970	10/06	1.327	10/07	0.998	10/08	Continuing	Continuing	
Subtotal Product Development			10.384	5.668		3.883		2.640		2.092		0.000	24.667	
Remarks:														
Program Management Support	C/CPFF	EDO, Alex, VA	0.650	0.712	10/05	0.616	10/06	0.539	10/07	0.463	10/08	Continuing	Continuing	
Program Management Support	C/CPFF	EDO, Panama City FL	0.000									Continuing	Continuing	
Training Development			0.000									Continuing	Continuing	
Integrated Logistics Support			0.000									Continuing	Continuing	
Configuration Management			0.000									Continuing	Continuing	
Technical Data			0.000									Continuing	Continuing	
GFE			0.000									Continuing	Continuing	
Award Fees			0.000									Continuing	Continuing	
Subtotal Support			0.650	0.712		0.616		0.539		0.463		0.000	2.980	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603654N/Joint Service EOD Development

PROJECT NUMBER AND NAME: 4023/EOD VSW MCM/Force Protection UUV

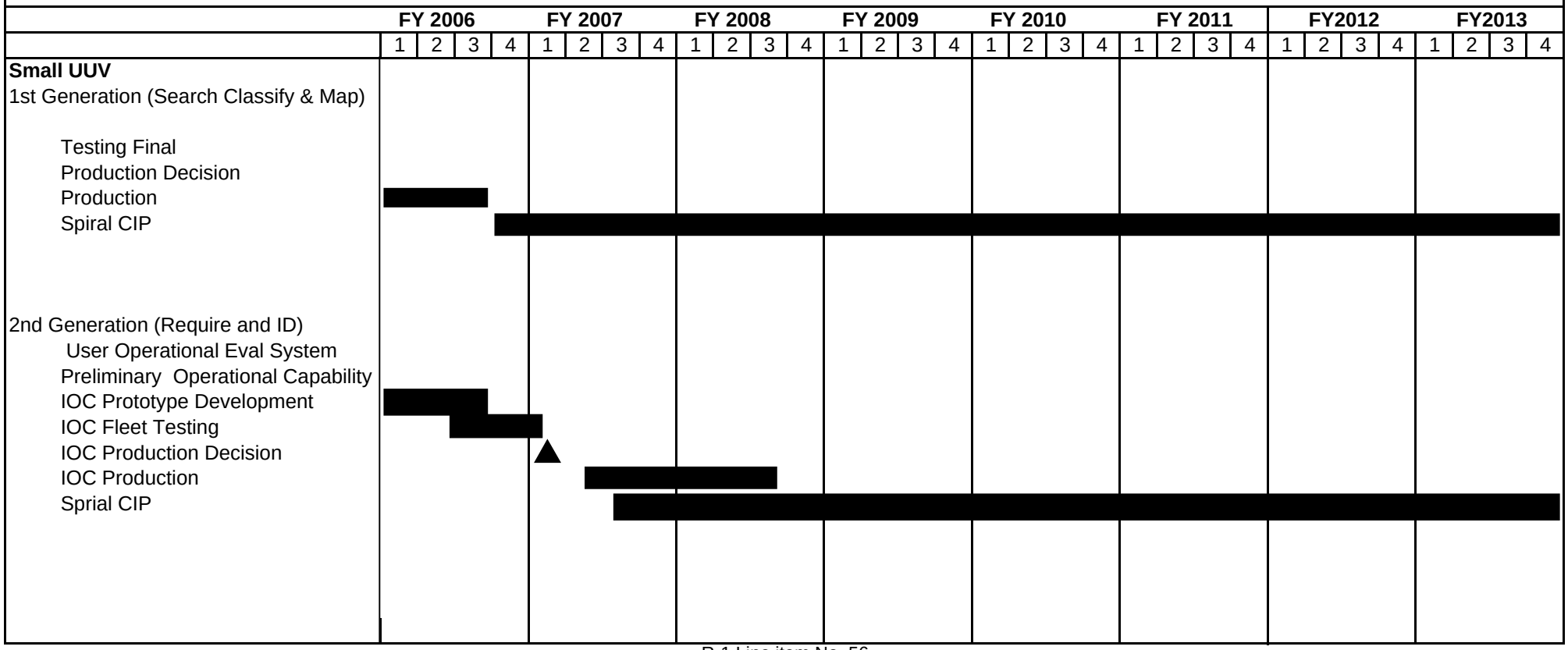
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	EODTD, IH, MD	1.710	1.180	10/05	0.986	10/06	0.635	10/07	0.600	10/08	Continuing	Continuing	
Operational Test & Evaluation	WX	EODTD, IH, MD	0.290	0.290	10/05	0.252	10/06	0.127	10/07	0.142	10/08	Continuing	Continuing	
Subtotal T&E			2.000	1.470		1.238		0.762		0.742		0.000	6.212	
Remarks:														
Program Management Support	WX	EODTD, IH, MD	0.490	0.370	10/05	0.310	10/06	0.211	10/07	0.173	10/08	Continuing	Continuing	
Miscellaneous	WX	Various	0.678	0.150	10/05	0.085	10/06	0.080	10/07	0.114	10/08	Continuing	Continuing	
Subtotal Management			1.168	0.520		0.395		0.291		0.287		0.000	2.661	
Remarks:														
Total Cost			14.202	8.370		6.132		4.232		3.584		0.000	36.520	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND I **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 Prtoection UUV

RDT&E Milestone Chart

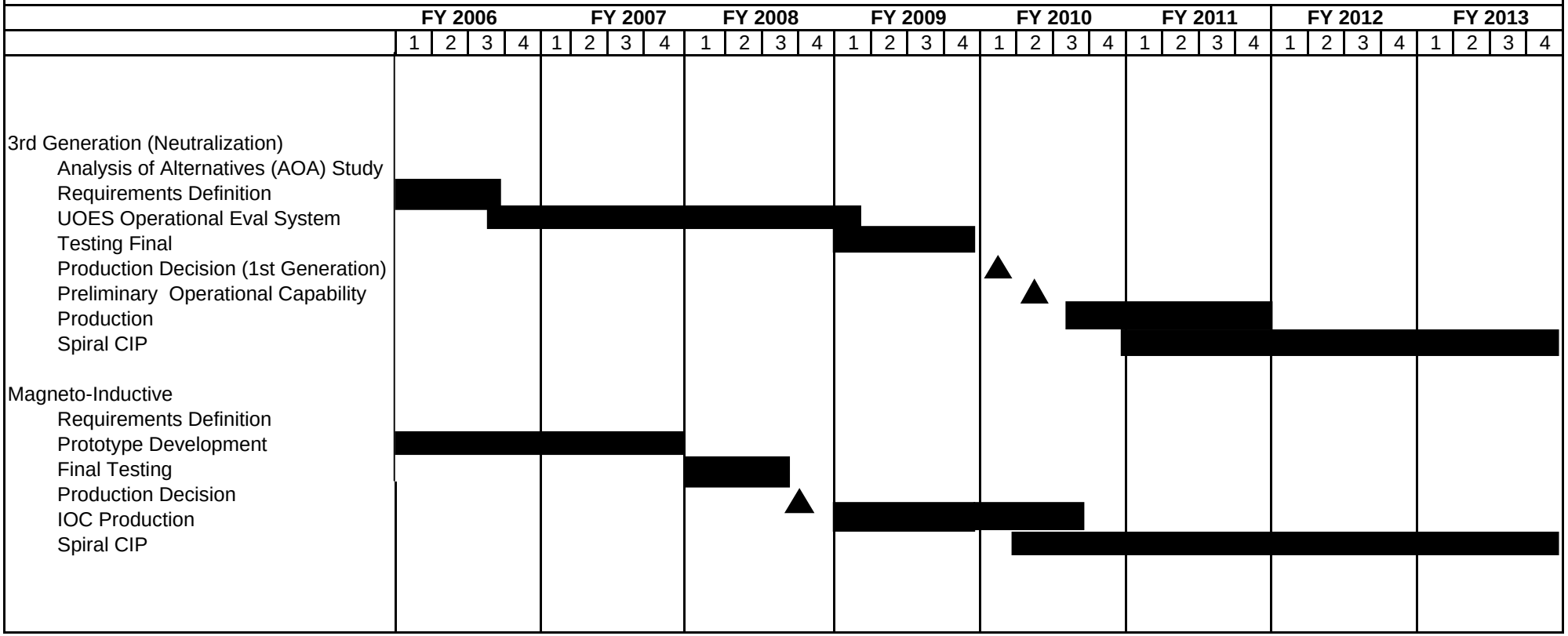


CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N **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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
1st Generation Small UUV (Search, Classify & Map)								
Testing Final								
Production Decision								
Production	1Q-3Q							
Spiral CIP	4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
2nd Generation (Require and ID)								
UOES Operational Eval System								
Preliminary Operational Capability								
IOC Prototype Development	1Q-3Q							
IOC Testing	3Q-4Q	1Q						
IOC Production Decision		1Q						
IOC Production		2Q-4Q	1Q-3Q					
Sprial CIP		3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
3rd Generation (Neutralization)								
Analysis of Alternatives (AOA)								
Requirements Definition	1Q-3Q							
UOES Operational Eval System	3Q-4Q	1Q-4Q	1Q-4Q	1Q				
Testing Final				1Q-4Q				
Production Decision (1st Generation)					1Q			
Preliminary Operational Capability					2Q			
Production					3Q-4Q	1Q-4Q		
Spiral CIP						1Q-4Q	1Q-4Q	1Q-4Q
Magneto-Inductive								
Requirements Definition								
Protoype Development	1Q-4Q	1Q-4Q						
Final Testing			1Q-3Q					
Production Decision			3Q					
IOC Production				1Q-4Q	1Q-3Q			
Spiral CIP					2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603658N Cooperative Engagement Capability				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
Total PE Cost	**95.824**	**64.296**	**33.283**	**39.174**	**49.412**	**46.444**	**46.727**	**47.039**	
Cooperative Engagement Capability (CEC) / 2039	**$82.607**	**$53.138**	**$33.283**	**$39.174**	**$49.412**	**$46.444**	**$46.727**	**$47.039**	
Cooperative Engagement Capability Tech Refresh / 2616	**$12.259**	**$11.158**							
9999 / Congressional Adds	**$0.958**								

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. DDG 1000, E-2, LCS).

Funding includes the following Congressional adds: FY06 $0.958M for Navigation system enhancement aboard U.S. submarines and $12.259M for CEC Improvements and integration into NIFC-CA. FY07 includes $11.158 for CEC Improvements.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY07 Pres Controls)	99.557	53.406	50.458	53.738
Current FY 08/09 Presidents Budget:	95.824	64.296	33.283	39.174
Total Adjustments	-3.733	10.890	-17.175	-14.564
Summary of Adjustments				
Programmatic Adjustments			-17.175	-14.564
Undistributed General Reductions	-.239			
Reprogramming	-2.000			
SBIR	-2.494			
Congressional Program Reductions		-.310		
Congressional Increase	1.000	11.200		
Subtotal	-3.733	10.890	-17.175	-14.564

Schedule:

Commander Operational Test and Evaluation Force (COMOPTEVFOR) released their final FOT&E-3 report for CEC in July 2006. The AN/USG-2 shipboard system was found to be operationally effective and operationally suitable. The AN/USG-3 airborne system remained operationally effective, but not operationally suitable. Five major issues remain unresolved. An OT-IIIB Working Group and a Test and Evaluation Integrated Product Team have been formed to analyze the test results and recommend the best way ahead.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

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, allignment of the Joint Track Manager (JTM) architecture is on track with a report out at the Joint Single Integrated Air Picture Systems Engineering Organization's (JSSEO) Integrated Architecture Behavior Model (IABM) System Functional Requirements (SFR) review scheduled for August 2006. The Engineering Assessment (EA) 5 Test and Analysis Plan for Time Box (TB) 30 was signed and delivered in May 2006. The Navy Engineering Assessment Working Group (EAWG) Engineering Assessment Readiness Review was held in June 2006. EA 5 is on track with the final report anticipated in September 2006. Future CEC systems will use the Sierra II chip for secure data transmission. The Sierra II replaces the CDH chip used in legacy AN/USG-2/3 systems. The Sierra II chip is planned to be introduced into the FY08 production line.

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0206313M	RDT&E,N (Marine Corps)	4.000	2.300	.900	.600					CONT	CONT
PU 61254	RDT&E,A (U.S. Army)									9.700	9.700
BLI 019500	E-2D PPUs			15.975						CONT	CONT
BLI 227300	Procurement, Marine Corps			3.000	7.000	10.000	5.000			CONT	CONT
BLI 260600	Cooperative Engagement Capability/OPN	20.447	27.372	26.562	35.652	27.440	26.151	26.827	23.790	CONT	CONT
BLI 202000	CG Modernization/OPN	4.600	10.700	20.800	21.000	27.700	32.300	34.000	34.600	CONT	CONT
BLI 019500	E-2D Aircraft /APN				13.049	13.365	18.176	18.984	19.402	CONT	CONT
Various	SCN Procurement	16.187	12.034	25.738	5.585	17.131	12.731	5.286	5.402	CONT	CONT

D. 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). JSSEO's Integrated Architecture Behavior Model (IABM) will ultimately replace the CEC Data Distribution System (DDS) which will be backward compatible with the IABM. The IABM will first be integrated with AEGIS as part of their Spiral 4 upgrade and delivered to the fleet by FY12.

E. MAJOR PERFORMERS:

General Dynamics Advanced Information Systems	Fairfax, Virginia	Systems Integration / Design Agent
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).
SAIC	St. Petersburg, FL	Mini Teminal
Sechan	Lititz, PA	Single Data Processor

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603658N Cooperative Engagement Capability				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
Total PE Cost	**94.866**	**64.296**	**33.283**	**39.174**	**49.412**	**46.444**	**46.727**	**47.039**	
Cooperative Engagement Capability (CEC) / 2039	**$82.607**	**$53.138**	**$33.283**	**$39.174**	**$49.412**	**$46.444**	**$46.727**	**$47.039**	
Cooperative Engagement Capability Tech Refresh / 2616	**$12.259**	**$11.158**							

Includes Congressional Add for $12.259M. This funding is considered an addition to the 2039 effort.

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.

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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. DDG 1000, E-2, LCS).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	12.518	3.457	2.000	1.000
RDT&E Articles Quantity				

FY06 Plan: Continued development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Complete FOT&E-3 testing efforts.
FY07 Plan: Continue development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Begin FOT&E-4 testing efforts on SSDS MK2 Mod 2 (LPD 17) euipped ships and begin Single Data Processor (SDP) test analysis.
FY08 Plan: Continue development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Complete FOT&E-4 test analysis, continue SDP test analysis.
FY09 Plan: Continue development, integration and testing of computer program Baseline 2.1 for ACDS, AEGIS, and SSDS platforms. Begin FOT&E-5 testing and analysis. Continue SDP test analysis.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	11.142	16.590	9.300	12.200
RDT&E Articles Quantity				

FY06 Plan: Continued CEC integration efforts with E-2D and begin CEC integration efforts with Naval Integrated Fire Control (NIFC-CA).
FY07 Plan: Continue CEC integration efforts with E-2D and NIFC-CA.
FY08 Plan: Continue CEC integration efforts with E-2D and NIFC-CA.
FY09 Plan: Continue CEC integration efforts with E-2D and NIFC-CA.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.990	1.000	1.300	1.564
RDT&E Articles Quantity				

FY06 Plan: Continued Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.
FY07 Plan: Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.
FY08 Plan: Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.
FY09 Plan: Continue Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes by NSWC, Dahlgren.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	17.516	16.545	0.000	0.000
RDT&E Articles Quantity				

FY06 Plan: Continued SI/DA contract for JTM / IABM integration, implementation, and test.
FY07 Plan: Complete SI/DA contract for JTM / IABM integration, implementation, and test.
FY08 Plan: None
FY09 Plan: None

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	29.500	0.000	0.000	0.000
RDT&E Articles Quantity				

FY06 Plan: Continued P3I hardware and software efforts including DDS breakup and test, comms independence efforts including antenna alternatives and JTRS compliancy, and Mini Terminal alternatives efforts.
FY07 Plan: None
FY08 Plan: None
FY09 Plan: None

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	13.120	16.684	11.405	12.832
RDT&E Articles Quantity				

FY06 Plan: 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. Funding includes $9.046M of Congressional Plus-up funding.
FY07 Plan: 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. Funding includes $4.158M of Congressional Plus-up funding.
FY08 Plan: 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.
FY09 Plan: 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.000	2.000	2.000	2.000
RDT&E Articles Quantity				

FY06 Plan: Continued participation in system interoperability exercises and Joint Integrated Demonstrations.
FY07 Plan: Continue participation in system interoperability exercises and Joint Integrated Demonstrations.
FY08 Plan: Continue participation in system interoperability exercises and Joint Integrated Demonstrations.
FY09 Plan: Continue participation in system interoperability exercises and Joint Integrated Demonstrations.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.080	8.020	7.278	9.578
RDT&E Articles Quantity				

FY06 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.
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.
FY08 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.
FY09 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.

CLASSIFICATION:

Exhibit R-3 Project Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603658N Cooperative Engagement Capability

PROJECT NUMBER AND NAME: 2039/Cooperative Engagement Capability

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Development	CPAF	Raytheon, St. Petersburg, Fl	597.892	2.498	Dec-05	5.880	Oct-06	6.494	Oct-07	8.665	Oct-08	Continuing	Continuing	TBD
AN/USG-2/3 Development	CPAF	Award Fees	89.249	.435	Dec-05	.879	Oct-06	.964	Oct-07	1.286	Oct-08	Continuing	Continuing	TBD
AN/USG-2/3 Development/TDA	CPFF	JHU/APL, Laurel, MD	260.993	10.674	Mar-06	6.750	Oct-06	7.134	Oct-07	8.000	Oct-08	Continuing	Continuing	TBD
Block 2 Development/Competition	CPAF	Various	11.000										11.000	11.000
SI/DA	CPAF	General Dynamics	18.157	14.035	Feb-06	14.465	Dec-06						44.622	44.622
SI/DA	CPAF	Award Fees	2.343	1.780	Feb-06	2.080	Dec-06						16.423	16.423
P3I	CPAF	Raytheon	31.835	22.348	Mar-06	6.544							58.379	58.379
P3I	CPAF	Award Fees	4.715	3.839	Mar-06	.969							5.684	5.684
E-2C/AHE Aircraft Integration	CPAF	Northrop-Grumman, LI., NY	187.408										187.408	187.408
DDG 1000	CPAF	Raytheon, Massachusetts		7.631	Apr-06	2.499							2.499	2.499
NIFC-CA Integration/E2-D	TBD	Various	7.908	11.142	Various	16.950	Various	9.300	Various	12.200	Various	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	21.206	.388	Oct-05	.134	Nov-06	.150	Nov-07	.200	Nov-08	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										0.957	.957
Software Support Activity/SEIA	WX	NSWC, Dahlgren, VA	66.357	2.895	Nov-05	1.000	Nov-06	1.300	Nov-07	1.564	Nov-08	Continuing	Continuing	TBD
Antenna Redesign	RC	NSWC, Crane, IN	6.483										6.483	6.483
Production Engineering Activity	WX	NSWC, Crane, IN	43.988	1.659	Nov-05	.763	Nov-06	.750	Nov-07	.900	Nov-08	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	15.000	10.000	Nov-05								15.000	15.000
SSDS OA	CPAF	Raytheon, San Diego, CA	15.415										15.415	15.415
RMP	Various	Various	3.300										3.300	3.300
Various	Various	Miscellaneous	91.101	.000	Various	1.576	Various	4.841	Various	5.009	Various	Continuing	Continuing	TBD
Subtotal Product Development			1,737.975	89.324		60.489		30.933		37.824		Continuing	Continuing	TBD

Remarks:

CLASSIFICATION:

Exhibit R-3 Project Cost Analysis (page 2)

DATE: **February 2007**

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

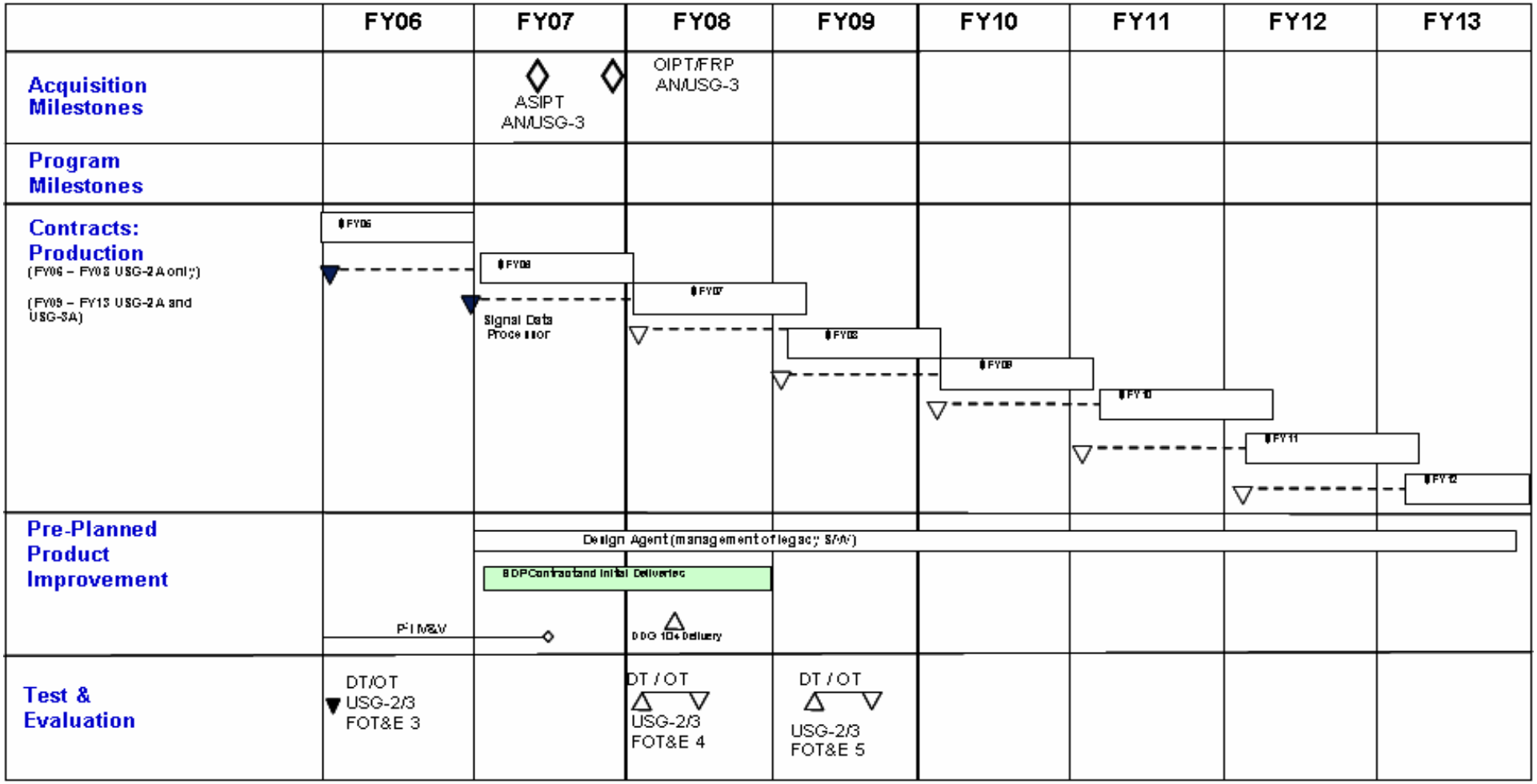
PROGRAM ELEMENT: 0603658N Cooperative Engagement Capability

PROJECT NUMBER AND NAME: 2039/Cooperative Engagement Capability

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test Support	CPAF	Raytheon, St. Peters., FL	10.206										10.206	TBD
Test Support	CPAF	Award Fees	1.512										1.512	TBD
Test Support	CPFF	JHU/APL, Laurel, MD	11.607										11.607	11.607
Test Support	WX	NRL, Washington, DC	8.862										8.862	8.862
Test Support	WX	NSWC, Port Hueneme, CA	34.185	1.200	Oct-05	1.857	Oct-06	.400	Oct-07	.200	Oct-08	Continuing	Continuing	TBD
Air Operations Test Support	WX	NAVAIR (PMA-207)	7.959			.300							8.259	8.259
Test Data Reduction Analysis	WX	NWAS, Corona, CA	19.464	.883	Nov-06	.500	Oct-06	.500	Oct-07	.250	Oct-08	Continuing	Continuing	TBD
Test Support	WX	NSWC, Crane, IN	0.279										0.279	TBD
Test Support	WX	COMOPTEVFOR, VA	8.654	1.035	Oct-05	.300	Oct-06	.300	Oct-07	.150	Oct-08	Continuing	Continuing	TBD
Various	Various	Various	7.908	1.594	Various	.500	Various	.800	Various	.400	Various	Continuing	Continuing	TBD
Subtotal Test & Evaluation			110.636	4.712		3.457		2.000		1.000			40.725	TBD
Remarks:														
Program Management Support	FFP	Various	61.497	.830	Jul-06	.350	Oct-06	.350	Oct-07	.350	Oct-08	Continuing	Continuing	TBD
Subtotal Management			61.497	.830		.350		.350		.350		Continuing	Continuing	TBD
Remarks:														
Total Cost			1,910.108	94.866		64.296		33.283		39.174		Continuing	Continuing	TBD
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
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



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603658N Cooperative Engagement Capability				PROJECT NUMBER AND NAME 2039/Cooperative Engagement Capability			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestone III (MSIII) (AN/USG-2) - 3Q02								
Full Rate Production (AN/USG-2) - 3Q02								
LRIP-5 (AN/USG-3) - 3Q02								
LRIP-6 (AN/USG-3) - 3Q02								
FOT&E-1 (AN/USG-3) (DT-IIIA/OT-IIIA) (Start) - 2Q02								
FOT&E-1 (AN/USG-3) (DT-IIIA/OT-IIIA) (Complete) - 1Q03								
FOT&E-2 (AN/USG-3) (DT-IIIB/OT-IIIB) (Start) - 2Q04								
FOT&E-2 (AN/USG-3) (DT-IIIB/OT-IIIB) (Complete) - 3Q04								
Initial Operational Capability (AN/USG-3)								
Full Operational Capability (FOC) (AN/USG-2/3)								
FOT&E-3 (OT-IIIC) Start								
FOT&E-3 (OT-IIIC) Complete	1Q06							
FOT&E-4 (OT-IIID) Start		1Q07						
FOT&E-4 (OT-IIID) Complete		2Q07						
FOT&E-5 (OT-IIID) Start				2Q09				
FOT&E-5 (OT-IIID) Complete				3Q09				
Block 1 Production								
P3I Production	2Q06	1Q07	1Q08	1Q09				
OIPT/FRP AN/USG-3		3Q07						
DDG 104 Delivery			2Q08					

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME: VARIOUS
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9814N	0.958			
SSN Navigation Enhancement Module				

FY06 Plan: Funds provided by Congress to enhance the accuracy of the submarine AN/WSN-7A Inertial Navigation System by improving computer codes using new algorithms to take advantage of available geophysical data. This includes gravity map matching capability and compensation for deflection of vertical due to proximity to sea mounts.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603713N/Ocean Engineering Technology Development			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**23.938**	**17.259**	**5.122**	**5.384**	**15.133**	**10.310**	**5.335**	**5.436**
0099/Deep Submergence Biomedical Development	**2.942**	**2.987**	**3.320**	**3.286**	**3.385**	**3.407**	**4.002**	**4.078**
0394/Shallow Depth Diving Equipment	**20.996**	**13.276**	**1.802**	**2.098**	**11.748**	**6.903**	**1.333**	**1.358**
9999/Congressional Adds	**0.000**	**0.996**	**0.000**	**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:

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.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 President's Budget Controls)	24.462	16.324	3.717	3.752
Current Budget (FY08 President's Budget Controls)	23.938	17.259	5.122	5.384
Total Adjustments	-0.524	0.935	1.405	1.632
Summary of Adjustments				
Economic Assumptions	0.005	-0.065		
Congressional Increases	0.012	1.000		
Cancelled Accounts	-0.031			
Program Adjustments	-0.510		1.405	1.632
	-0.524	0.935	1.405	1.632

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.942**	**2.987**	**3.320**	**3.286**	**3.385**	**3.407**	**4.002**	**4.078**
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0099/Deep Submergence Biomedical Development

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.641	1.689	2.004	1.968
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.301	1.298	1.316	1.318
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 rescuees.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0099/Deep Submergence Biomedical Development	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. 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.

E. 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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Developmer	0099/Deep Submergence Biomedical Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Developmen	0099/Deep Submergence Biomedical Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NEDU	26.673	2.739	10/05	2.776	10/06	3.101	10/07	3.059	10/08	Continous	38.348	
	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			27.844	2.739		2.776		3.101		3.059		0.000	39.519	
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support	Various		0.217										0.217	
Travel			0.081	0.025	various	0.033	various	0.041	various	0.049	various	Continous	0.229	
Labor (Research Personnel)													0.000	
*SBIR Assessment			0.343	0.178	various	0.178	various	0.178	various	0.178	various		1.055	
Subtotal Management			0.641	0.203		0.211		0.219		0.227		0.000	1.501	
Total Cost			28.485	2.942		2.987		3.320		3.286		0.000	41.020	

Remarks:*SBIR Assessment inludes other extramural program assessments.

Remarks:

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**20.996**	**13.276**	**1.802**	**2.098**	**11.748**	**6.903**	**1.333**	**1.358**
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 11) 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.

Shallow Depth Diving Equipment managed under SEA 00C (FY08 - FY11) - This project develops 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. Current plans are to perform R&D in the areas of contaminated water diving in FY08 – FY13.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0394/Shallow Depth Diving Equipment

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09	
Accomplishments/Effort/Subtotal Cost	20.996	13.276	0.600	0.800	
RDT&E Articles Quantity					

Continue fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Complete design, complete fabrication and acceptance testing of prototype Pressurized Rescue Module and support equipment. Begin integration and testing of all SRDRS components.

	FY 06	FY 07	FY 08	FY 09	
Accomplishments/Effort/Subtotal Cost			1.202	1.298	
RDT&E Articles Quantity					

R&D for contaminated water diving.

	FY 06	FY 07	FY 08	FY 09	
Accomplishments/Effort/Subtotal Cost					
RDT&E Articles Quantity					

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0394/Shallow Depth Diving Equipment

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY: *

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).

E. MAJOR PERFORMERS: **

Oceaneering International is providing systems engineering and integration support for the SRS. Oceanworks, Inc. is the detailed designer and fabricator of the Pressurized Rescue Module.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603713N/Ocean Engineering Technology

PROJECT NUMBER AND NAME: 0394/Shallow Depth Diving Equipment

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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		N/A		6.638	
Decompression Chambers (SDC 1 and 2)	FFP	NFESC	3.317		N/A		N/A		N/A		N/A		3.317	
Various Mission Support Equip. (MSE)	Various	GPC(Past)/Various (Fut	9.502		N/A		N/A		N/A		N/A		9.502	
Pressurized Rescue Module Sys. (PRMS)	CPIF	Oceanworks	39.175	12.824	Various	2.619	Various		N/A		N/A		54.618	
Various PRMS MSE	Various	Miscellaneous	10.836	0.000	Various		N/A		N/A		N/A		10.836	
Systems Engineering - Design, Integration	Various	Oceaneering	14.537	0.829	Various	6.484	Various	0.600	Various	0.800	Various	19.652	42.902	
Systems Engineering - Technical	Various	Various	4.543	0.537	Various	0.000	Various		N/A		N/A	0.300	5.380	
Licenses													0.000	
GFE													0.000	
Award Fees	CPAF	Oceaneering	1.234		N/A		N/A		N/A		N/A		1.234	
	CPAF	GPC	0.426		Various		Various		Various		Various		0.426	
Subtotal Product Development			90.208	14.190		9.103		0.600		0.800		19.952	134.853	

Remarks:
1. Restructuring or rephasing of non-rescue related subsytems and conmponents 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	1.192	N/A	1.288			2.759	
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	1.134	0.841	Various	0.746	Various		Various		Various		2.721	
Configuration Management	CPAF	Oceaneering	0.659	0.489	Various	0.340	Various		Various		Various	0.500	1.988	
Technical Data													0.000	
GFE													0.000	
Award Fees	CPAF	Phoenix International	0.023		N/A		N/A		N/A		N/A		0.023	
Subtotal Support			4.610	1.330		1.086		1.192		1.288		0.500	10.006	

Remarks:

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603713N/Ocean Engineering Technolo

PROJECT NUMBER AND NAME: 0394/Shallow Depth Diving Equipment

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	2.923	2.762	Various	1.963	Various				Various		7.648	
Operational Test & Evaluation	WX	COMOPTEVFOR	1.713	0.050	Various	0.225	Various				Various	0.320	2.308	
													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			4.636	2.812		2.188		0.000		0.000		0.320	9.956	
Remarks:														
Contractor Engineering Support	Various	QBS/Various	1.414	0.074	Various	0.000	Various		Various		Various		1.488	
Government Engineering Support	WX	NFESC	0.526	0.106	Various		N/A		N/A		N/A		0.632	
Government Engineering Support	MIPR	DOI	1.161		N/A		N/A		N/A		N/A		1.161	
Government Engineering Support	WX	PSNSY, Various	0.553	0.339	Various	0.070	Various		Various		Various		0.962	
Government Engineering Support	Various	Miscellaneous	2.634	1.360	Various	0.326	Various		Various		Various		4.320	
Program Management Support	Various	Miscellaneous	1.135	0.267	Various	0.280	Various		Various		Various	0.420	2.102	
Travel	Various	Various	1.188	0.075	Various	0.223	Various	0.010	Various	0.010	Various	0.150	1.656	
SBIR Assessment (remark 1)			1.370	0.443	Various	0.000	Various		Various		Various		1.813	
Subtotal Management			9.981	2.664		0.899		0.010		0.010		0.570	14.134	
Remarks:														
Total Cost			109.435	20.996		13.276		1.802		2.098		21.342	168.949	

Remarks:
1. SBIR Assessment includes other extramural program assessments FY 02-05.

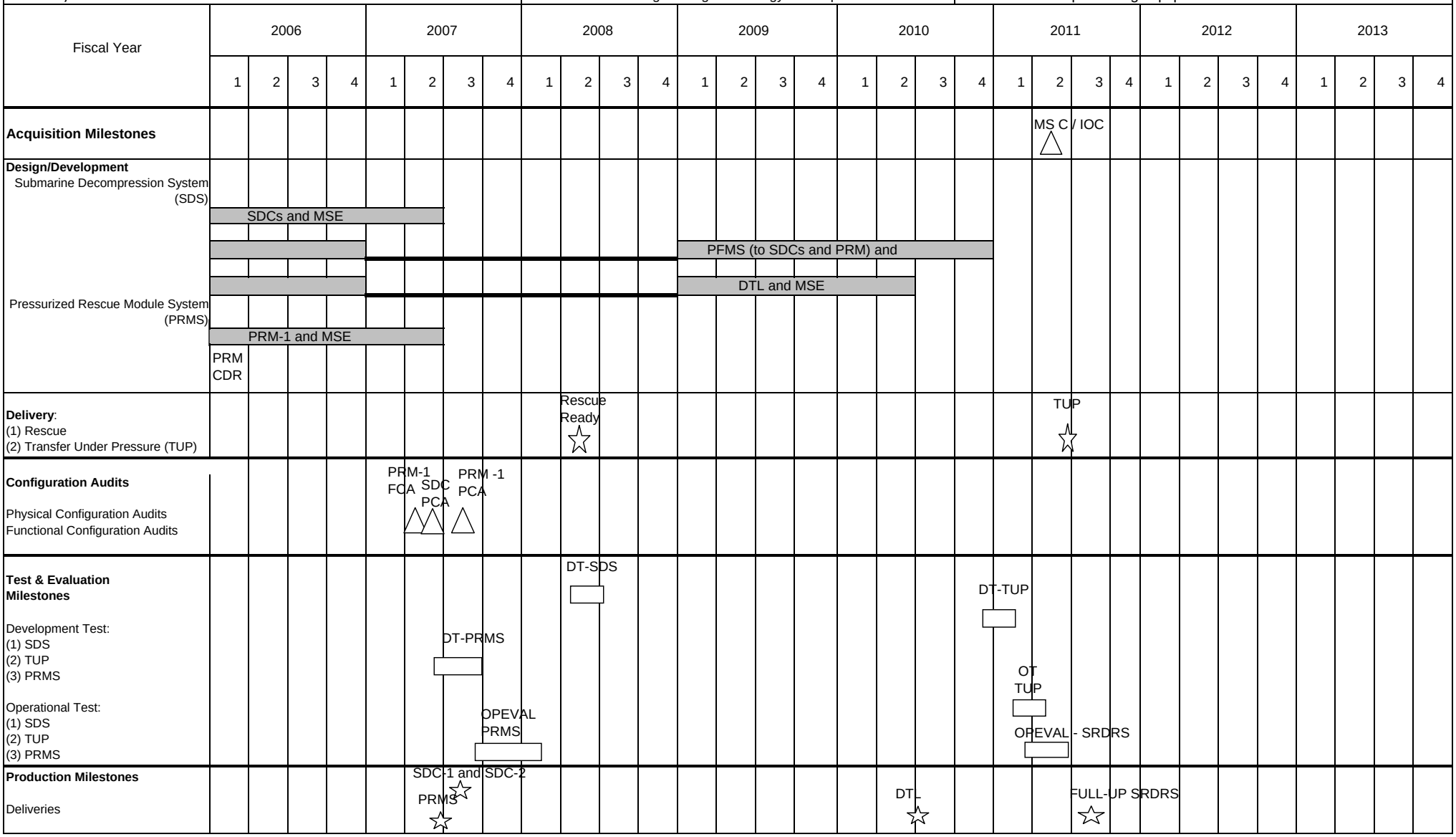
R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0394/Shallow Depth Diving Equipment



R-1 SHOPPING LIST - Item No. 58

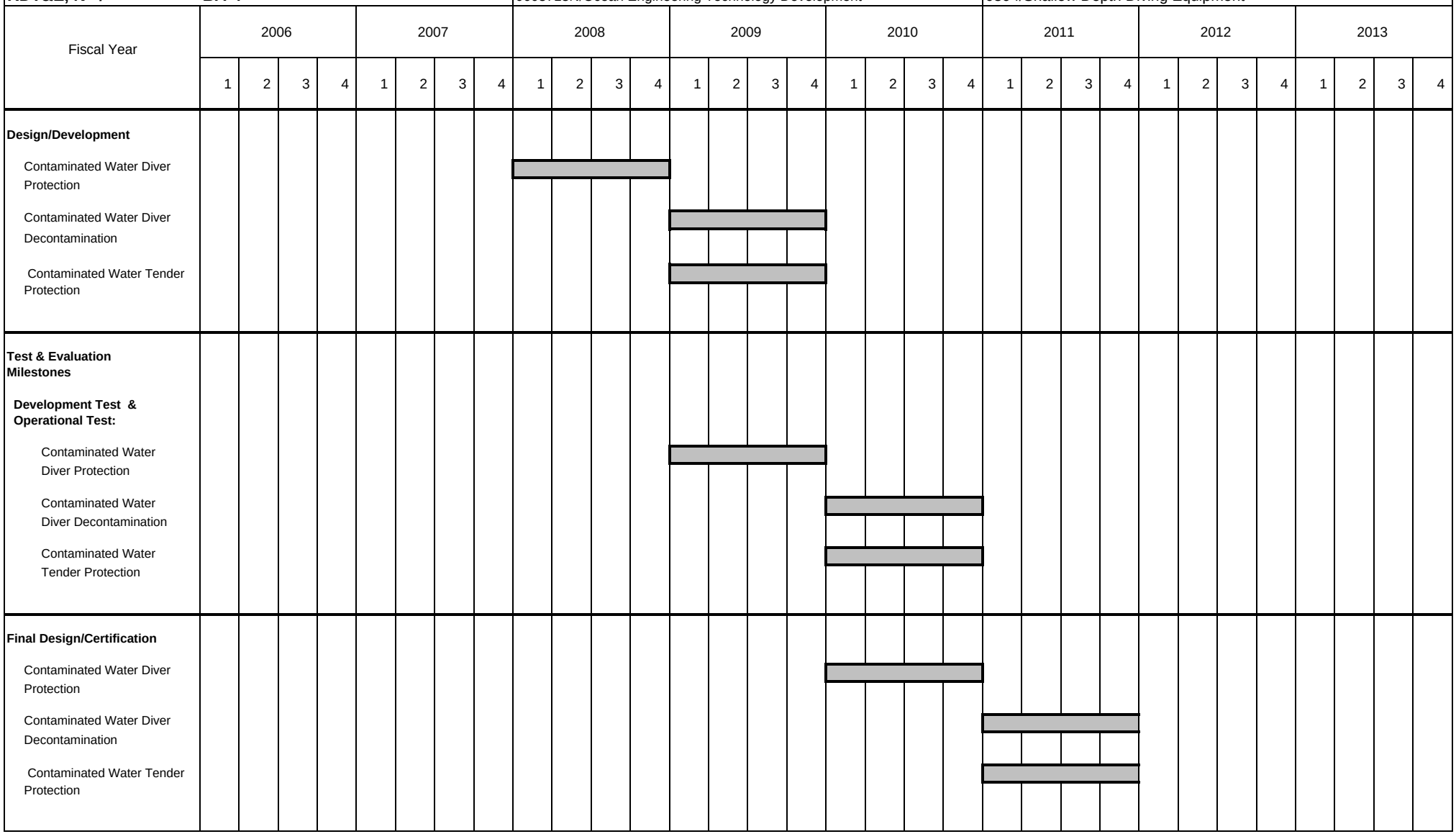
* Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT& BA-4**	PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestone II (MSII)								
Detail Design/Development and Fab (SDS - SDC, PFMS,	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Detail Design/Devel. and Fab (PRMS)	1Q-4Q	1Q-2Q						
Critical Design Review (CDR) - PRMS	1Q-4Q							
Physical Configuration Audit - SDC		2Q						
Hardware Delivery - SDC-1 and SDC 2		3Q						
Functional Configuration Audit (FCA) - PRM		2Q						
Developmental Testing (DT-SDS)			1Q-2Q					
Physical Configuration Audit - PRM		3Q						
Hardware Delivery - PRMS		2Q						
Developmental Testing (DT-PRMS)		2Q-3Q						
Operational Testing (OPEVAL-PRMS)		4Q	1Q					
Acquisition Capability Delivery - Rescue Ready			2Q					
Hardware Delivery - DTL					2Q-3Q			
Developmental Testing (DT-TUP)					4Q	1Q		
Operational Testing (OT-TUP)						1Q-2Q		
Acquisition Capability Delivery - TUP						2Q-3Q		
Operational Evaluation Full SRDRS						1Q-2Q		
Milestone C						3Q		
Acquisition Capability Delivery - Full Up SRDRS						3Q		
First Deployment (Rescue Ready (DSRV Equiv.)			2Q					
First Deployment (Fly Away Recompression w/ TUP)						3Q		
First Deployment Full -Up SRDRS						3Q		
Initial Operational Capability (IOC) of Full Up SRDRS						3Q		

R-1 SHOPPING LIST - Item No. 58

EXHIBIT R4, Schedule Profile		Date: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	0394/Shallow Depth Diving Equipment



R-1 SHOPPING LIST - Item No. 58

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME 0394/Shallow Depth Diving Equipment			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Design/Development of Contaminated Water Diver Protection			1Q-4Q					
Design/Development of Contaminated Water Diver Decontamination				1Q-4Q				
Design/Development of Contaminated Water Tender Protection				1Q-4Q				
Development Test/\Operational Test of Contaminated Water Diver Protection				1Q-4Q				
Development Test/\Operational Test of Contaminated Water Diver Decontamination					1Q-4Q			
Development Test/\Operational Test of Contaminated Water Tender Protection					1Q-4Q			
Final Design/Certification of Contaminated Water Diver Protection					1Q-4Q			
Final Design/Certification of Contaminated Water Diver Decontamination						1Q-4Q		
Final Design/Certification of Contaminated Water Tender Protection						1Q-4Q		

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	Project Unit (PU) No. and Name: Congressional Plus-Ups: VARIOUS

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
9A09N	0.000	0.996	0.000	0.000
Advanced Composite Riverine Craft				

This Congressional Add funding is for advanced composite riverine craft.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE PE0603721N / Environmental Protection			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**26.956**	**25.972**	**19.850**	**20.297**	**20.989**	**21.436**	**21.830**	**22.243**
Shipboard Waste Management / 0401	**8.812**	**7.053**	**6.578**	**7.036**	**7.108**	**7.561**	**7.712**	**7.871**
Environmental Compliance / 2210*	**0.829**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Pollution Abatement / 0817	**7.271**	**8.895**	**8.936**	**8.877**	**9.452**	**9.399**	**9.559**	**9.727**
Marine Mammal Research/ 9204	**4.345**	**4.247**	**4.336**	**4.384**	**4.429**	**4.476**	**4.559**	**4.645**
Issue 9999 - Congressional Adds**	**5.699**	**5.777**	**0.000**	**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 laws, regulations, Executive Orders, policies and international agreements. Projects support the Navy's compliance with: OPNAVINST 5090.1B CH-4 and other DoD and 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 enable Navy ships and submarines to comply with laws, regulations, and policies in four major areas: ozone depleting substances, liquid wastes, solid wastes, and hazardous and other wastes. Project 2210 supports RDT&E that enables Navy compliance with environmental 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 supports RDT&E to develop and validate technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner. Project 9204 supports RDT&E to develop planning and monitoring tools for minimizing Fleet contacts with and potential harrassment of protected marine animals in response to Federal laws and regulations and public scrutiny.

* In FY07, the requirements and funding of Project 2210 are combined with Project 0817.

** Issue 9999 is comprised of FY06 and FY07 Congressional adds.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	R-1 Item Nomenclature: PE0603721N / Environmental Protection

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 Pres Controls)	27.547	20.271	21.301	21.555
Current BES/OSD Budget:	26.956	25.972	19.850	20.297
Total Adjustments	-0.591	5.701	-1.451	-1.258
Summary of Adjustments				
FY06 SBIR Tax	-0.505			
Congressional Undistributed Reductions	-0.048			
Undistibuted General Reductions	-0.018			
Department of Energy Transfer				
Program Adjustments			-1.451	-1.258
Execution Adjustments				
Rate Adjustements				
Revised Economic Assumptions	-0.020	-0.099		
Congressional Add		5.800		
Subtotal	-0.591	5.701	-1.451	-1.258

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2007	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**8.812**	**7.053**	**6.578**	**7.036**	**7.108**	**7.561**	**7.712**	**7.871**
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 considered environmentally susceptible, where special prohibitions on ship discharges and operations are imposed. Navy vessels must comply with applicable environmental legal requirements while maintaining 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, systems, and data 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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	0401 / Shipboard Waste Management

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Ozone Depleting Substances	0.100	0.000	0.000	0.000
RDT&E Articles Quantity				

FY 06: (U) Completed development of solutions for lubrication and engineering design problems in surface ship CFC-114 air-conditioning plant conversion designs.

	FY 06	FY 07	FY 08	FY 09
Technical Authority	0.000	0.000	1.985	2.642
RDT&E Articles Quantity				

FY 08: (U) Develop environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities.

FY 09: (U) Continue developing environmental equipment/system requirements documentation, design criteria and guidance, specifications and standards, and certification protocols, and perform test and evaluation, to facilitate execution of technical authority for legacy and new-design ship and submarine environmental capabilities.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	0401 / Shipboard Waste Management

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Integrated Liquid Wastes	5.300	5.100	2.915	2.836
RDT&E Articles Quantity				

FY 06: (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; completed development of shipboard Oil Pollution Abatement System improvements; continued 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.

FY 08: (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.

FY 09: (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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	0401 / Shipboard Waste Management

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY07	FY 08	FY 09
Solid Wastes	0.050	0.000	0.000	0.000
RDT&E Articles Quantity				

FY 06: (U) Completed evaluation of commercial thermal destruction systems for shipboard solid wastes.

	FY 06	FY 07	FY 08	FY 09
Hazardous and Other Major Ship Wastes	3.362	1.953	1.678	1.558
RDT&E Articles Quantity				

FY 06: (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 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 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).

FY 08: (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.

FY 09: (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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

(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) Related RDT&E: (U) Readiness, Training, and Environmental Quality/Logistics and Environmental Quality (PE 62233N)

D. ACQUISITION STRATEGY:

(U) RDT&E Contracts are Competitive Procurements.

E. MAJOR PERFORMERS

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	Various	Misc. Contracts	18.484	0.365		0.300		0.200		0.200		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									Cont	Cont	N/A
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			23.971	0.365		0.300		0.200		0.200		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	9.838	1.000		0.000		0.000		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			9.838	1.000		0.000		0.000		0.000		0.000	10.838	

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD	148.024	3.860		3.900		3.900		4.300		Cont	Cont	N/A
Developmental Test & Evaluation	WR	NRL,Wash,DC	28.682	0.500		0.400		0.400		0.300		Cont	Cont	N/A
Developmental Test & Evaluation	WR	SPAWARSYSCEN,SD,CA	11.070	0.300		0.200		0.300		0.350		Cont	Cont	N/A
Developmental Test & Evaluation	WR	Misc. Govt Labs	22.832	0.000		0.000		0.000		0.000		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	SAIC, San Diego, CA	14.651	0.600		0.500		0.500		0.550		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	Misc. Contracts	12.274	0.249		0.133		0.158		0.216		Cont	Cont	N/A
Process Control Engineering	C/CPFF	M. Rosenblatt & Sons	1.500	1.500		1.500		1.000		1.000			5.500	
Developmental Test & Evaluation	PD	ONR, Arlington, VA	0.400										0.400	
Developmental Test & Evaluation	WR	Naval Postgraduate School	1.800										1.800	
Process Control Engineering	MIPR	EPA, Hdqtrs	0.400	0.340		0.100		0.100		0.100			0.940	
GFE													0.000	
Award Fees													0.000	N/A
Subtotal T&E			241.633	7.349		6.733		6.358		6.816		0.000	Cont	N/A
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support													0.000	
Travel			0.230	0.020		0.020		0.020		0.020			Cont	
Labor (Research Personnel)													0.000	
SBIR Assessment				0.078									0.078	
Subtotal Management			0.230	0.098		0.020		0.020		0.020		0.000	Cont	
Remarks:														
Total Cost			275.672	8.812		7.053		6.578		7.036		Cont	Cont	Cont
Remarks:														

EXHIBIT R-4, Schedule Profile		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME 0401 / Shipboard Waste Management

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
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	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Low/No-Copper Hull Antifouling Coatings	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Underwater Hull Cleaning System	■	■	■	■	■																											
Environmental Information Management System (EIMS)	■	■	■	■	■																											
Technical Authority									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2007	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2210 ENVIRONMENTAL COMPLIANCE	**0.829**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification: This project supports development and implementation of technologies that 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 Standard (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 beginning in Fiscal Year 2007.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603721N, Environmental Protection	2210, Environmental Compliance

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.829			

Engine Emissions Technology:
(U) 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.

Aircraft Hazardous Materials and Shipboard Waste Reduction:
(U) Research, develop and test alternatives to airecraft 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 clearners, coatings and coatings maintenance technologies repair kits.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603721N, Environmental Protection	2210, Environmental Compliance

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0603851D (Environmental Security Technology Certification Program)										

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.

E. MAJOR PERFORMERS:

		FY 2006 Award Date	FY 2007 Award Date	FY 2008 Award Date	FY 2009 Award Date
NAWCAD, Patuxent River, MD	Test and Evaluation	3/14/06			

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	0.829	

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:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation														
Operational Test & Evaluation		NADEP, Cherry Point, NC		0.068									0.068	
Operational Test & Evaluation		NAWCAD, Pax River, MD		0.705									0.705	
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	0.772		0.000		0.000		0.000		0.000	0.772	

Remarks:

Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support													0.000	
Travel		NAVAIR, Pax River, MD		0.057									0.057	
Transportation													0.000	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.057		0.000		0.000		0.000		0.000	0.057	

Remarks:

Total Cost			0.000	0.829		0.000		0.000		0.000		0.000	0.829	

Remarks:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME 0817 / Pollution Abatement Ashore			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**7.271**	**8.895**	**8.936**	**8.877**	**9.452**	**9.399**	**9.559**	**9.727**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(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.

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 and 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.

(U) EEC-2 MAXIMIZE TRAINING AND TESTING RANGE REQUIREMENTS WITHIN ENVIRONMENTAL CONSTRAINTS

(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 processes to mitigate environmental impacts, restrictions, and costs at Navy training and test ranges 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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

(U) EEC-3 PLATFORM MAINTENANCE AND REPAIR WITH MINIMAL ENVIRONMENTAL FOOTPRINT

(U) This capability focuses on minimizing or eliminating 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 and aircraft and air vehicles. 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.

(U) EEC-4. SUPPORT SHORE READINESS WITHIN ENVIRONMENTAL CONSTRAINTS

(U) Naval shore establishment requires the capability to operate and maintain facilities and provide waterfront 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 minimize infrastructure and operational costs, regulated emissions, while minimizing 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.

((U) EEC-5. COST-EFFECTIVE MANAGEMENT OF ENVIRONMENTAL REGULATORY REQUIREMENTS

(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 cost 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.

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B. Accomplishments/Planned Program - EEC-2 Maximize Training and Testing Range Requirements Within Environmental Constraints

	FY 06	FY 07	FY 08	FY 09
Maximize Training and Testing Requirements Within Environmental Constraints	1.687	2.456	2.888	3.029
RDT&E Articles Quantity				

FY06: (U) 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 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 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. The initiation of the Shallow Water Test Range (SWTR) Seafloor Cable Baseline Assessment will establish a baseline condition from which any adverse effects associated with seafloor ranges, in particular, seafloor communication cables can be determined. 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 asses the potential for adverse effects at sites where soil contamination due to munitions or explosive constituents is a concern. Development of direct push and point-and-detect sensor systems, for use in the field, will allow the measurement of perchlorate either for rapid screening and monitoring purposes or for contaminant source characterization of perchlorate in groundwater or surface waters.
FY07: (U) Continue providing validated knowledge, models, and processes 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 analysis of the effects of underwater UXO in order to give the Navy the ability to assess and determine the risks from underwater UXO, analysis on the long term disposition of underwater cables, and the development of range residue management tools to ensure the continued operation of Navy testing and training ranges. Increased efforts on the SWTR Seafloor Cable Baseline Assessment will continue sampling in order to finish establishing a baseline condition from which any adverse effects associated with seafloor ranges, in particular, seafloor communication cables can be determined. Continue developing direct push and point-and-detect sensor systems for perchlorate.
FY08: (U) Continued efforts on the SWTR Seafloor Cable Baseline Assessment will continue sampling in order to finish establishing a baseline condition from which any adverse effects associated with seafloor ranges, in particular, seafloor communication cables can be determined. 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 will address energetic emission for open burn/open detonation permitting, evaluate underwater blow-in-place detonation mitigation techniques, and the evaluation of the environmental effects of abandoned equipment in Navy ocean ranges. Continue developing direct push and point-and-detect sensor systems for perchlorate.
FY09: (U) Conclusion of efforts on the SWTR Seafloor Cable Baseline Assessment will allow decision makers to determine a long term monitoring strategy for the underwater range. Continue providing validated knowledge, models, and processes 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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RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

B. Accomplishments/Planned Program (Cont.) - EEC-3 Platform Repair & Maintenance with Minimal Environmental Impact

	FY 06	FY 07	FY 08	FY 09
Maintenance	2.752	4.015	4.235	4.074
RDT&E Articles Quantity				

FY 06: (U) The tasks in this EEC address ship and submarine Fleet and aircraft maintenance operations with the overall objectives of reducing the cost of compliance and mission increasing readiness. Continuing efforts will provide new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft. Analysis on acid recycle systems for pipe flushing wastes will identify technology alternatives and allow selection of a candidate system as a pier side 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. A data tool to determine what hazardous materials are consumed and what wastes are generated by ship platform maintenance will allow future pollution prevention efforts to focus on specific chemicals and the operations that use them. 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 in a significant reduction in worker exposure to carcinogenic hexavalent chromium and increase service life of components. The use of low temperature powder coating will help minimize HAP/VOC emissions and the use of hexavalent chromium. Thin film sulfuric acid anodizing (TFSAA) 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 of 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. Suitable substitutes for polystyrene/polyester resins and chemical strippers used during repairs to radome will be demonstrated.

FY 07: (U) Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft. Development of dry dock best management practices and decision selection tool assisting naval shipyards, stations and bases in meeting the copper discharge standards will conclude. Alternative solvents demonstrations for ship maintenance operations and identification of alternatives for NAVSEA targeted chemicals will continue. The development of hazardous material allocation information for ship maintenance will continue. Additional tasks will be initiated that address Fleet maintenance operations with the overall objectives of reducing the cost of compliance and mission increasing readiness. (FY07 continued on next page)

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RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

B. Accomplishments/Planned Program (Cont.) - EEC-3 Platform Repair & Maintenance with Minimal Environmental Impact

	FY 06	FY 07	FY 08	FY 09
Aviation Maintenance				
RDT&E Articles Quantity				

FY 07: (U) (continued) 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. Continuing efforts include investigations into removal coating materials and the use of alternative coatings and plating materials to reduce the amount of hazardous materials used during the repair and maintenance of aircraft. Additional tasks will be initiated that address aircraft maintenance operations with the overall objectives of reducing the cost of compliance and mission increasing readiness. Efforts will also include investigating options to control emissions from tactical vehicle engines such as Jet Air Start Units (JASUs) that provide the compressed air to start jet engines. A new initiative will begin to develop, demonstrate, and transition cost-effective deactivation, demilitarization and disposal (3D) methods for legacy aircraft platforms, engines, and components. Another effort will develop and evaluate materials or processes for repair of powder coatings that will reduce or eliminate the air emissions associated with the current method and reduce labor cost.

FY 08: (U) Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft. Continued development of hazardous material allocation information for ship maintenance. Additional tasks will be initiated that address Fleet maintenance operations with the overall objectives of reducing the cost of compliance and mission increasing readiness. Continue effort on developing, demonstrating, and transitioning cost-effective deactivation, demilitarization and disposal (3D) methods for legacy aircraft platforms, engines, and components. A new initiative will demonstrate and validate to what extent a Cold Galvanized Coating Systems for Repair Applications repair technology can be successfully utilized in the Fleet to eliminate red rusting of HSS components. Continue to develop and evaluate materials or processes for repair of powder coatings that will reduce or eliminate the air emissions associated with the current method and reduce labor cost. Additional tasks will be initiated that address Fleet maintenance operations with the overall objectives of reducing the cost of compliance and mission increasing readiness.

FY09: (U) Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting from the repair and maintenance of ships, submarines, and aircraft.

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RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

B. Accomplishments/Planned Program (Cont.) - EEC-4 Support Shore Readiness within Environmental Constraints

	FY 06	FY 07	FY 08	FY 09
Support Shore Readiness within Environmental Constraints	1.386	1.576	1.157	1.163
RDT&E Articles Quantity				

FY 06: (U) Provide new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support, aviation support, and other base operations. The demonstration and validation of Improved BMPs- Stormwater Treatment Technology will enhance the management of stormwater run-off and reduce costs while addressing Navy unique requirements and 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 perofluro-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. An assessment of drinking water supply security technologies will investigate potable water supply security system methodologies and technologies that are available or under development and assess their applicability to the security of Navy water supplies. An investigation and demonstration is planned to improve biofouling control and preventative maintenance planning to ensure permanent oil containment boom systems meet or exceed their intended 4-year service life.

FY07: (U) 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. Continue the development of a wastewater treatment system to collect and treat the waste stream for vertical launch missile tubes. Initiate effort to determine strategy for use of compliant diesel engines. Continue investigating improved biofouling control and preventative maintenance planning for permanent oil containment boom systems.

FY08: (U) 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. Realign the program to focus on addressing the fleets high priority needs and investment in processes related to waterfront or aviation support.

FY09: (U) Continue providing new systems and processes to minimize regulated emissions, discharges and hazardous material usage resulting specifically from waterfront support and aviation support operations.

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B. Accomplishments/Planned Program (Cont.) - EEC-5 Cost-Effective Management of Environmental Regulatory Requirements

	FY 06	FY 07	FY 08	FY 09
Coastal Contamination and Contaminated Sediments	1.446	0.848	0.656	0.611
RDT&E Articles Quantity				

FY 06: (U) Provide 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 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 and 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. The assessment of pollutant source tracking technologies will allow the Navy to accurately quantify Navy contaminant loads by identifying, reviewing, demonstrating, and validating contaminant source tracking technologies, which will provide a technical framework for Navy RPMs and environmental managers, enabling them to (1) attribute existing contamination loads to support both IR/Cleanup and Compliance Programs, (2) clearly understand the suite of tracking technologies currently available, their strengths and weaknesses, as well as how those technologies can be used to develop management decisions for IR/Cleanup and Compliance, (3) use this scientific approach and these tools to prevent arbitrary and burdensome regulatory decisions and actions that negatively impact the Navy. The development of a guidance document will provide details of problems and solutions for Navy compliance with the D/DBP Rule and related issues.
FY 07: (U) Continue providing validated knowledge, models, processes and systems 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. Develop an integrated software system that will allow for more exact location/identification of UXO in sediments, thereby eliminating excess costs of investigating/remediating non-UXO metal anomalies and further reduce safety risks to workers conducting the removals and long-term safety to subsequent users. Ultimately, this will improve the decision-making strategy for prioritizing locations for cleanup both cost effectively and safely. 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.
FY08: (U) Continue providing validated knowledge, models, processes and system to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments. Demonstrate the practical application of Compound Specific Isotope Analysis (CSIA) associated with Monitored Natural Attenuation (MNA) to provide practical guidelines associated with its use and interpretation. Continue evaluating pollutant source tracking technologies.
FY09: (U) Continue providing validated knowledge, models, processes and systems to improve environmental monitoring and reporting, and to reduce the cost of compliance with regulations applicable to coastal contamination and contaminated sediments.

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RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

(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).

(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)

D. ACQUISITION STRATEGY:

(U) This project is categorized as Non-ACAT (Non Acquisition). 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) or directly through the base operating budget. 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) Fleet end user; 2) Funding sponsor for the Navy end user; 3) Other stakeholders with cognizance over the Navy process or operation being changed, 4) Cognizant environmental federal, state, and local regulators; and 5) The private or government organization that will produce the product.

D. MAJOR PERFORMERS:

Exhibit R-3 Cost Analysis (page 1)

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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
EEC 2	WR/PO	NFESC	1.548	1.160	varies	1.888	varies	1.883	varies	1.963	varies	Continuing	Continuing	N/A
EEC 2	WR/PO	SSC/SD	0.252	0.527	varies	0.568	varies	0.754	varies	0.761	varies	Continuing	Continuing	N/A
EEC 2	WR/PO	NSWC/IH	15.666	0.000		0.000		0.251	varies	0.305	varies	Continuing	Continuing	N/A
EEC 3	WR/PO	NFESC	10.859	1.396	varies	1.724	varies	1.368	varies	1.276	varies	Continuing	Continuing	N/A
EEC 3	WR/PO	NSWC/CD	5.971	0.506	varies	0.797	varies	1.358	varies	1.272	varies	Continuing	Continuing	N/A
EEC 3	WR/PO	NAWC PAX	0.815	0.850	varies	1.494	varies	1.509	varies	1.526	varies	Continuing	Continuing	N/A
EEC 4	WR/PO	NFESC	17.700	1.386	varies	1.476	varies	1.031	varies	1.030	varies	Continuing	Continuing	N/A
EEC 4	WR/PO	SSC/SD	0.000	0.000		0.100	varies	0.126	varies	0.133	varies	Continuing	Continuing	N/A
EEC 5	WR/PO	NFESC	2.635	0.903	varies	0.624	varies	0.479	varies	0.458	varies	Continuing	Continuing	N/A
EEC 5	WR/PO	SSC/SD	2.931	0.543	varies	0.224	varies	0.177	varies	0.153	varies	Continuing	Continuing	N/A
Subtotal Product Development			58.377	7.271		8.895		8.936		8.877				

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.

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	0817 / Pollution Abatement Ashore

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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			58.377	7.271		8.895		8.936		8.877		0.000		

Remarks:

EXHIBIT R4, Schedule Profile		DATE: February 2007
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	2006				2007				2008				2009				2010				2011				2012				2013			
	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
EEC 2: Maximiize training and Testing Requirements within Environmental Constraints																																
EEC 3: Platform Repair and Maintenance with Minimal Environmental Impact																																
EEC 4: Support Shore Readiness within Environmenal Constraints																																
EEC 5: Coast Effective Management of Environmental Regulatory Requirements																																

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2007	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**4.345**	**4.247**	**4.336**	**4.384**	**4.429**	**4.476**	**4.559**	**4.645**
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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	9204 / Marine Mammal Research

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Marine Mammal Location, Abundance and Movement	1.754	1.818	1.500	1.670

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.

FY08: (U) Continue investigations in marine mammal location, abundance, and movement through habitat investigations; predictive models; marine mammal database; and data analysis, protocols and surveys.

FY09: (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 06	FY 07	FY 08	FY 09
Criteria and Thresholds, Physiology and Behavior, and Effects of Sound	0.975	0.861	1.158	1.200

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.

FY08: (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.

FY09: (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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	9204 / Marine Mammal Research

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Mitigation Methodologies: Monitoring, New Technology, and Risk Assessment	1.516	1.418	1.500	1.400

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.

FY08: (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.

FY09: (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 06	FY 07	FY 08	FY 09
Acoustic Source Propagation	0.100	0.150	0.178	0.114

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.

FY08: (U) Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.

FY09: (U) Continue investigation of acoustic source propagation through 3-D modeling of multiple acoustic sources.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	9204 / Marine Mammal Research

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost

(U) Related RDT&E: Office of Naval Research (PE 601153 / PE 602435 / PE 602782 / PE 603235)
(U) Related RDT&E: Strategic Environmental Research & Development Program (SERDP)
(U) Related RDT&E: National Oceanographic Partnership Program (NOPP)

D. ACQUISITION STRATEGY:

(U) RDT&E Contracts are Competitive Procurements.

D. MAJOR PERFORMERS:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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:														

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NUWC		0.450		0.400		0.400		0.400				
Developmental Test & Evaluation	WX	NPGS, Monterey, CA		0.450		0.400		0.400		0.400				
Developmental Test & Evaluation	MIPR	NOAA, Fish Science Center		0.490		0.500		0.500		0.500				
Developmental Test & Evaluation	CPFF	Misc Contracts		0.213		0.147		0.236		0.284				
Developmental Test & Evaluation	CPFF	Scripps Institute		1.942		1.000		1.000		1.000				
Developmental Test & Evaluation	CPFF	U of Wash, APL		0.200		0.200		0.200		0.200				
Developmental Test & Evaluation	CPFF	Duke Univ.		0.425		0.400		0.400		0.400				
Developmental Test & Evaluation	CPFF	Oregon State Univ.		0.175		0.200		0.200		0.200				
Developmental Test & Evaluation	CPFF	University of Maryland				0.500								
Developmental Test & Evaluation	CPFF	Woods Hole Oceanographic Inst				0.500		1.000		1.000				
Operational Test & Evaluation														
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			0.000	4.345		4.247		4.336		4.384				
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	4.345		4.247		4.336		4.384				
Remarks:														

EXHIBIT R4, Schedule Profile			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	PE0603721N / Environmental Protection	9204 / Marine Mammal Research	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
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																																

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Project Unit (PU) No. and Name: Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9204C				
Integrated Marine Mammal Monitoring and Protection	1.449	1.793		

(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 gray whales and other marine mammals of special interest to the Navy.

	FY 06	FY 07	FY 08	FY 09
9536C				
Puget Sound Anoxia Research	1.739	1.992		

(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.

	FY 06	FY 07	FY 08	FY 09
9765N				
Coatings and Polymeric Films Development for Naval Applications	2.031			

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Project Unit (PU) No. and Name: Congressional Plus-Ups: VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06			
9537C				
Invasive Species Eradication Program	0.480			

(U) This Congressional Add is a continuation of Congressional Add Project 9537. This effort involves: (1) testing the relative efficacy of toxicants and trapping programs for brown tree snakes (BTS) in both long-term controlled landscapes and previously uncontrolled landscapes; (2) evaluating the size distribution of snakes controlled by toxicants and trapping. Efforts help prevent BTS from reaching other topical islands and the United States Mainland by reducing BTS populations around Navy cargo and port facilities.

	FY 06	FY07		
9A10N				
Marine Mammal Budget Plus-up		1.992		

(U) This Congressional Add is to the Project 9204 Budget. This effort involves: (1) The integration of several technologies in large-scale ocean experiments designed to observe, measure and analyze the effect of mid-frequency sonar type signals on the behavior of marine mammals. Several variables have to be considered, such as an initial understanding of "normal" behavior in different ocean environments and in different marine mammal habitat conditions. Behavior encompasses such things as feeding, breeding, nursing, migration, calling etc. (2) Applying the most advanced finite element (analytical) computer modeling techniques to simulate the effect of various types of sonar signals on marine mammal physiology, organs, tissue etc. This is the only method available to investigate and determine the potential of physical damage to marine mammals from intense sound that does not require destructive testing on real animals, which is prohibited. The initial task in this effort involves translating all the dissected small marine mammal body parts into physical variables such as: density, shear modulus, elasticity etc. The ultimate goal in this rigorous process is to convert normal scaling from electronic scans (MRI, MRA cat scan etc) into these required physical variables that will be used in the analytical models. (3) Testing the feasibility of using the Navy's complex undersea training ranges to detect, classify, track and monitor marine animals that are within the range. An initial determination as to what animals are likely to "call" and under what circumstances must first be addressed. The ultimate goal is to use existing range sensors to measure any "abnormal" marine mammal behavior and relate it to any man-made influence such as commercial shipping, oil and gas exploration, Navy sonar activity etc. (4) Determining the habitat of several threatened species of marine mammals by correlating physical ocean conditions with the expectation of the development of a food source or other conditions which will attract marine mammals and change the average normal population densities. (5) The continued development of instrumentation to uniquely study the natural behavior of beaked whales, that seem to be most vulnerable to Navy sonar type signals. Deployment of these instruments along with the use of other ancillary ocean data collection devices to first determine the natural behavior of these whales and then to observe, measure and analyze changes to this normal behavior because of some outside influence such as shipping, underwater sound, distant undersea explosives etc.

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE 0603724N/Navy Energy Program			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**8.217**	**1.594**	**5.335**	**5.635**	**5.839**	**6.010**	**6.118**	**6.228**
0829/Energy Conservation	**0.000**	**0.000**	**3.737**	**3.899**	**4.021**	**4.138**	**4.213**	**4.290**
0838/Navy Mobility Fuels	**1.561**	**1.594**	**1.598**	**1.736**	**1.818**	**1.872**	**1.905**	**1.938**
9999/Congressional Adds	**6.656**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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 (f) 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.

(U) Project 0829 - The Fleet Readiness R&D Program is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This Fleet driven program, managed through NAVSEA 05N, will identify mature potential energy saving and maintenance improvement areas, by involvement with Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEO, and the TMA/TMI community.

(U) Project 0838- 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.

(U) Project 9999: See project description on the R2a.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE 0603724N/Navy Energy Program

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget:	8.521	1.600	1.586	1.750
FY 2008/09 President's Budget:	8.217	1.594	5.304	5.666
Total Adjustments	-0.304	-0.006	3.718	3.916
Summary of Adjustments				
SBIR Reductions	-0.206	0.000	0.000	0.000
Program adjustments	-0.030	-0.006	0.001	0.085
CIVPERS/CS Adjustment	0.000	0.000	-0.018	-0.020
Congressional Action 1% Reduction	-0.068	0.000	0.000	0.000
RS Technical Adjustment	0.000	0.000	3.735	3.851
Subtotal	-0.304	-0.006	3.718	3.916

Schedule: Not Applicable .

Technical: Not Applicable .

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program				PROJECT NUMBER AND NAME 0829/Energy Conservation			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**0.000**	**3.737**	**3.899**	**4.021**	**4.138**	**4.213**	**4.290**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Fleet Readiness R&D Program is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This Fleet driven program, managed through NAVSEA 05N, will identify mature potential energy saving and maintenance improvement areas, by involvement with Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEO, and the TMA/TMI community. Potential technology target areas will include: Hull Hydrodynamics, Hull Husbandry, Heating, Ventilation & Air Conditioning (HVAC) Systems, Thermal Management, Propulsion Systems, Electrical Systems, and Power Generation and Storage systems. The program directly supports Fleet requirements to reduce energy consumption and lower maintenance costs. The program will focus on research and development across the following major areas:

(U) Hull Hydrodynamic Project(s) - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements.

(U) Hull Husbandry Project(s) - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both landbased and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency.

(U) HVAC Projects (s) - Project funds will be utitized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements.

(U) Thermal Management Project(s) - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC.

(U) Propulsion Systems Project(s) - Project funds will be utilized to indentify, perform landbased and ship board testing of ship propulsion system improvements, on Gas Turbine and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. (SCD# 1801 - Online Waterwash System for GTM/GTG, SCD# 1808 Power Conservation Management)

(U) Electrical Systems Project(s) - Project funds will be utilized to indentify, perform landbased and ship board testing of ship electrical system improvements, to reduce overall fuel consumption and lower maintenance costs. (SCD# 1817 Variable Speed Drive VSD) for 1000 Gal. Firemain System, (SCD# 1818 VSD-IMP for 2000 Gal. Firepumps)

(U) Power Generation & Storage System Project(s) - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program	PROJECT NUMBER AND NAME 0829/Energy Conservation

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.934	0.973
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Hull Hydrodynamic Project(s) - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.187	0.195
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Hull Husbandry Project(s) - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both landbased and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.187	0.194
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) HVAC Projects (s) - Project funds will be utitized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603724N/Navy Energy Program	0829/Energy Conservation

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.188	0.194
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Thermal Management Project(s) - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC.

	FY 05	FY 06	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.119	1.175
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Propulsion Systems Project(s) - Projects funds will be utilized to indentify, perform landbased and ship board testing of ship propulsion system improvements, on Gas Turbine and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. (SCD# 1801 - Online Waterwash System for GTM/GTG, SCD# 1808 Power Conservation Management)

	FY 05	FY 06	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.934	0.973
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Electrical Systems Project(s) - Projects funds will be utilized to indentify, perform landbased and ship board testing of ship electrical system improvements, to reduce overall fuel consumption and lower maintenance costs. (SCD# 1817 Variable Speed Drive VSD) for 1000 Gal. Firemain System, (SCD# 1818 VSD-IMP for 2000 Gal. Firepumps)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program	PROJECT NUMBER AND NAME 0829/Energy Conservation

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.188	0.195
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) Power Generation & Storage System Project(s) - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N /BA-4	0603724N/Navy Energy Program	0829/Energy Conservation	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
N/A										

D. ACQUISITION STRATEGY:

This is a non acquisition program that develops, evaluates, and validates mature technologies in support of Fleet fuel and maintenance savings.

E. MAJOR PERFORMERS:

Field Activities & Locations - Work Performed:

NSWC Carderock, Bethesda, MD and Philadelphia- Utlilize various engineering capabilities and core equities within the Carderock Division to support the goals of the program. This aligns within the Ship and Ships Systems Product Area.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**		PROGRAM ELEMENT 0603724N/Navy Energy Program						PROJECT NUMBER AND NAME 0829/Energy Conversation						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development		NAVSEA, Carderock						0.374		0.387		Continuing	Continuing	
Systems Engineering		NAVSEA, Carderock						0.374		0.387		Continuing	Continuing	
Engineering Development		NAVSEA, Carderock						0.747		0.778		Continuing	Continuing	
Demonstration & Evaluation		NAVSEA, Carderock						0.748		0.783		Continuing	Continuing	
												Continuing	Continuing	
Licenses													0.000	
Tooling												0.000	0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.000	0.000		0.000		2.243		2.335		0.000	4.578	
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:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2007**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**			PROGRAM ELEMENT 0603724N/Navy Energy Program					PROJECT NUMBER AND NAME 0829/Energy Conversation						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		NAVSEA, Carderock						0.747		0.783		Continuing	Continuing	
Operational Test & Evaluation		NAVSEA, Carderock						0.187		0.195		Continuing	Continuing	
Live Fire Test & Evaluation													0.000	
Test Assets		NAVSEA, Carderock						0.187		0.195		Continuing	Continuing	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			0.000	0.000		0.000		1.121		1.173		0.000	1.121	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support		NAVSEA, Carderock						0.261		0.275		Continuing	Continuing	
Travel		NAVSEA, Carderock						0.037		0.039		Continuing	Continuing	
Labor (Research Personnel)		NAVSEA, Carderock						0.075		0.077		Continuing	Continuing	
SBIR Assessment													0.000	
Subtotal Management			0.000	0.000		0.000		0.373		0.391		0.000	0.764	
Remarks:														
Total Cost			0.000	0.000		0.000		3.737		3.899		0.000	7.636	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program	PROJECT NUMBER AND NAME 0829/Energy Conversation	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Engineering Milestones																																
Proposal Development																																
Proposal Acceptance																																
Modeling and Simulation (If Required)																																
Prototype Development																																
Prototype Demo																																
Land- based Testing																																
Determine Fuel & Maintenance Savings																																
Shipboard Eval																																
Component Inplementation																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program				PROJECT NUMBER AND NAME 0829/Energy Conversation			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
PROPOSAL DEVELOPMENT			Q1	Q1	Q1	Q1	Q1	Q1
PROPOSAL ACCEPTANCE			Q2	Q2	Q2	Q2	Q2	Q2
MODELING AND SIMULATION			Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
PROTOTYPE DEVELOPMENT			Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
PROTOTYPE DEMONSTRATION				Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
LAND-BASED TESTING				Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
DETERMINE FUEL & MAINTENANCE SAVINGS				Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
SHIPBOARD EVALUATION				Q4	Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4
COMPONENT IMPLEMENTATION RECOMMEND					Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4	Q1Q2Q3Q4

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**	PROGRAM ELEM PROGRAM ELEMENT NUMBER AND NAME 0603724N/ NAVY ENERGY PROGRAM				PROJECT NUMBER AND NAME 0838/ NAVY MOBILITY FUELS			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**1.561**	**1.594**	**1.598**	**1.736**	**1.818**	**1.872**	**1.905**	**1.938**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A. (U) 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 nnecessarily 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 specificatioin 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, storeage and consuming and are essential to fleet operations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.785	0.794	0.791	0.879
RDT&E Articles Quantity	N/A	N/A	N/A	7

(U) 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.

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 ulta-clean, lowsulfur 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.

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.776	0.800	0.807	0.857
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

(U) 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 fue specification American Society For the 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 ultr-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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable.										

D. ACQUISITION STRATEGY:

Not Applicable.

E. MAJOR PERFORMERS:

NAWCAD, Patuxent River, MD	Technical engineering support to help identify and execute requirements associated with Navy Mobility Fuels Program.	FY06 Award	FY07 Award Date Oct-05	FY08 Award Date Oct -06	Date Oct -07

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													0.000	
													0.000	
Systems Development		NRL, Washington DC	0.350										0.350	
													0.350	
Licenses													0.000	
Tooling												0.000	0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			0.350	0.000		0.000		0.000		0.000		0.000	0.350	

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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603724N/ NAVY ENERGY PROGRAM

PROJECT NUMBER AND NAME: 0838/ NAVY MOBILITY FUELS

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	0.862	0.781	Various	0.794	Various	0.791	Various	0.879	Various		3.228	
Developmental Test & Evaluation	MIPR	Army Tank & Armaments	0.228										0.228	
Live Fire Test & Evaluation													0.000	
Test Assets													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			1.090	0.781		0.794		0.791		0.879		0.000	3.456	

Remarks:

Contractor Engineering Support													0.000	
Program Management Support	Various	Various	1.216	0.780	Various	0.453	Various	0.807	Various	0.857	Various		3.256	
Program Management Support		Army Tank & Armaments	0.339			0.347							0.686	
Travel														
Labor (Research Personnel)													0.000	
SBIR Assessment													0.000	
Subtotal Management			1.555	0.780		0.800		0.807		0.857		0.000	4.019	

Remarks:

Total Cost			2.995	1.561		1.594		1.598		1.736		0.000	7.923	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
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	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Engineering Milestones																																
Aircraft Fuels																																
Ship Fuels																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
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			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Aircraft Fuels	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4
Ship Fuels	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603724N/ NAVY ENERGY PROGRAM	PROJECT NUMBER AND NAME Project Unit (PU) No. and Name: Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9498N				
Megawatt (MW) Molten Carbonate Fuel Cell Demo	3.064	0.000	0.000	0.000
RDT&E Articles Quantity	1	N/A	N/A	N/A

(U) 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 inferface 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.

	FY 06	FY 07	FY 08	FY 09
9769N				
Megawatt (MW) Molten Carbonate Fuel Cell Demo	3.592	0.000	0.000	0.000
RDT&E Articles Quantity	1	N/A	N/A	N/A

(U) Design and manufacture one 1 MW molten carbonate fuel cell and install at NAS Pearl Harbor in Hawaii. Operate for 12 months, collect and report performance data. The purpose of field test is to demostrate the feasibility of the molten carbonate fuel cell operating on propane fuel and interfacing 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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							February 2007	
Appropriation/Budget Activity **RDT&E,N BA4**				R-1 Item Nomenclature: 0603725N/ Facilities Improvement				
COST ($ in millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**7.134**	**8.263**	**4.131**	**4.090**	**4.072**	**4.026**	**4.096**	**4.164**
0995 Naval Facilities System	**1.435**	**1.691**	**1.738**	**1.800**	**1.862**	**1.914**	**1.946**	**1.979**
3155 Force Protection Ashore	**4.549**	**2.488**	**2.393**	**2.290**	**2.210**	**2.112**	**2.150**	**2.185**
9859 Regenerative Fuel Cell Back-up Power (Congressional Add)	**1.150**							
9859N Regenerative Fuel Cell Back-up Power (Congressional Add)		**1.096**						
9A11N Advanced Tech to Reduce Vulnerability of Military Installations (Congressional Add)		**1.992**						
9A12N Permanent Magnet Linear Generator Power Buoy System (Congressional Add)		**0.996**						

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 Facilities, Sustainment Restoration and Modernization (FSRM) program, and Antiterrorism and Force Protection (ATFP) Other Procurement, Navy (OP,N) program. Project 0995 addresses four Navy facilities requirements during the fiscal years FY 2006 through FY 2009: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Facilities, 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 FY2006 the Force Protection Ashore 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.

B. Program Change Summary:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous PRES Budget: (FY07 Pres Controls)	5.296	4.194	4.183	4.101
Current PB Budget: (FY08/09 PB Controls)	7.134	8.263	4.131	4.090
Total Adjustments	1.838	4.069	-0.052	-0.011
Summary of Adjustments				
Small Business Adjustments	-0.148	0.000	0.000	0.000
BRAC 05 Miti adjustments	0.000	0.000	0.000	0.001
Program adjustments	2.000	2.000	-0.077	-0.085
Congressional Adjustments	-0.014	2.069	0.025	0.073
Subtotal	1.838	4.069	-0.052	-0.011

C. Other Program Funding Summary: Provided in R-2a.

D. Acquisition Strategy: Provided in R-2a.

E. Performance Metrics: Provided in R-4.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 0995/ Naval Facilities System			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	1.435	1.691	1.738	1.800	1.862	1.914	1.946	1.979
RDT&E Articles Quantity	**2**	**0**	**1**	**2**	**TBD**	**TBD**	**TBD**	**TBD**

A. Mission Description and Budget Item Justification:

(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 Facilities, Sustainment Restoration and Modernization Programs (FSRP). Project 0995 is addressing four Navy facilities requirements during the fiscal years FY 2006 through FY 2009: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Facilities, 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."

(U) WATERFRONT FACILITIES REPAIR AND UPGRADE

(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 Impulse 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.

(U) TECHNOLOGIES TO REDUCE THE COST OF FACILITIES, SUSTAINMENT, RESTORATION AND MODERNIZATION (FSRM)

(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 FSRM 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 wide-spread implementation of the facility technologies urgently required to reduce the cost of correcting the deficiencies in the Navy's FSRM backlog. Estimated returns on these investments are better than 60 to 1.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995/ Naval Facilities System

(U) MODULAR HYBRID PIER (MHP)

(U) Modular Hybrid Pier started in FY 02 to achieve completions required by construction acquisition schedules.

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Naval Facilities System

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Waterfront Repair and Upgrade	0.000	0.000	0.100	0.300
RDT&E Articles Quantity	0	0	0	1

FY 06: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.

FY 07: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.

FY 08: 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.

FY 09: Initiate testing of high durability waterfront structural systems.

	FY 06	FY 07	FY 08	FY 09
Facilities, Sustainment, Restoration & Modernization	0.000	0.000	0.500	1.000
RDT&E Articles Quantity	0	0	1	1

FY 06: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.

FY 07: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.

FY 08: Complete field (validation) testing of high temperature pavement joint sealants.

FY 09: Complete testing (interim validation) of flexible (non-cracking) marking paint for bituminous airfield pavements. Continue testing of pile encasement to extend life of decomposing concrete. Initiate validation testing of high return-on-investment facilities technologies delivered from ONR FNC: Total Ownership Cost Reduction and other research by private/public secto.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Naval Facilities System

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Modular Hybrid Pier	1.435	1.691	1.138	0.500
RDT&E Articles Quantity	2	0	0	0

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 (MHP Test Bed). Initiate hydrodynamic modeling of MHP and berthed ships to wakes of passing ships.

FY 07: Complete structural and hydrodynamic tests on demonstration structure. Continue corrosion monitoring. Complete simulation and modeling of response to long period waves (harbor seiche) and to wakes of passing ships. 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 Develop conceptual design for small craft MHP.

FY 08: Test and evaluate performance of 1st prototype MHP.

FY09: Complete test and evaluate of first prototype MHP.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Naval Facilities System

C. Other Program Funding Summary:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	To Complete	Total Cost

P-1 Procurement Line Item No. & Name. Not applicable.
C-1 MILCON Project No. & Name. Not applicable.

(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.

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 Facilities, 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

E. Major Performers:

Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA. , Berger/Abam Engineers, Federal Way, WA, and Marathon Construction, Lakeside, CA.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	0995/ Naval Facilities System

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9859N				
Regenerative Fuel Cell Back-up Power	1.150	1.096	0.000	0.000
RDT&E Articles Quantity	1	1	N/A	N/A

(U) Improve the efficiency and economy of fuel cells in standby power ashore.

	FY 06	FY 07	FY 08	FY 09
9A11N				
Advanced Tech to Reduce Vulnerability of Military Ins	0.000	1.192	0.000	0.000
RDT&E Articles Quantity	N/A	1	N/A	N/A

(U) Accelerate improvements in the security of people and critical defense assets in Navy Region Northwest by adapting, developing, integrating, validating, piloting and accelerating the use of advanced technology solutions. The environmental factors imposed in this area, in addition to the close proximity of civilian communities and commerce, increase the challenges of implementing effective security technology. Existing technologies and emerging technology developments can be the basis for lower cost and more effective solutions not immediately accessible or visible to military planners.

	FY 06	FY 07	FY 08	FY 09
9A12N				
Permanent Magnet Linear Generator Power Buoy Sy	0.000	0.996	0.000	0.000
RDT&E Articles Quantity	N/A	1	N/A	N/A

(U) Demonstrate the performance of a long range night vision device that provides high image resolution for security surveillance in Anti-Terrorism Force Protection Ashore.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: PE0603725N / Facilities Improvement

PROJECT NUMBER AND NAME: 0995 / Naval Facilities System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Waterfront Facilities Repair & Upgrade	WX	NFESC, Pt Hueneme, CA	1.760					0.100	10/07	0.300	10/08	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	
Facilities, Sustainment, Restoration	WX	NFESC, Pt Hueneme, CA	3.583					0.200	10/07	0.500	10/08	nominal varies	cont.	na
and Modernization Tech	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	03/08	0.500	03/09	cont.	cont.	
Modular Hybrid Pier	WR	NFESC, Pt Hueneme, CA	1.510	0.764	10/05	0.791	10/06	0.538	10/07	0.300	10/08	nominal varies	cont.	na
	WR	SWDIV, San Diego, CA	0.337										0.337	
	FP	BergerAbam. Seattle, WA	2.308	0.546	05/06	0.800	10/06	0.500	10/07	0.200	10/08		4.354	
	RC	Marathon Const., CA	2.157	0.050	05/06								2.207	
	RC	Texas A&M	0.000	0.075	08/06	0.100	03/07	0.100	03/08	0.000				
			13.025	1.435		1.691		1.738		1.800		0.000	19.689	

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.

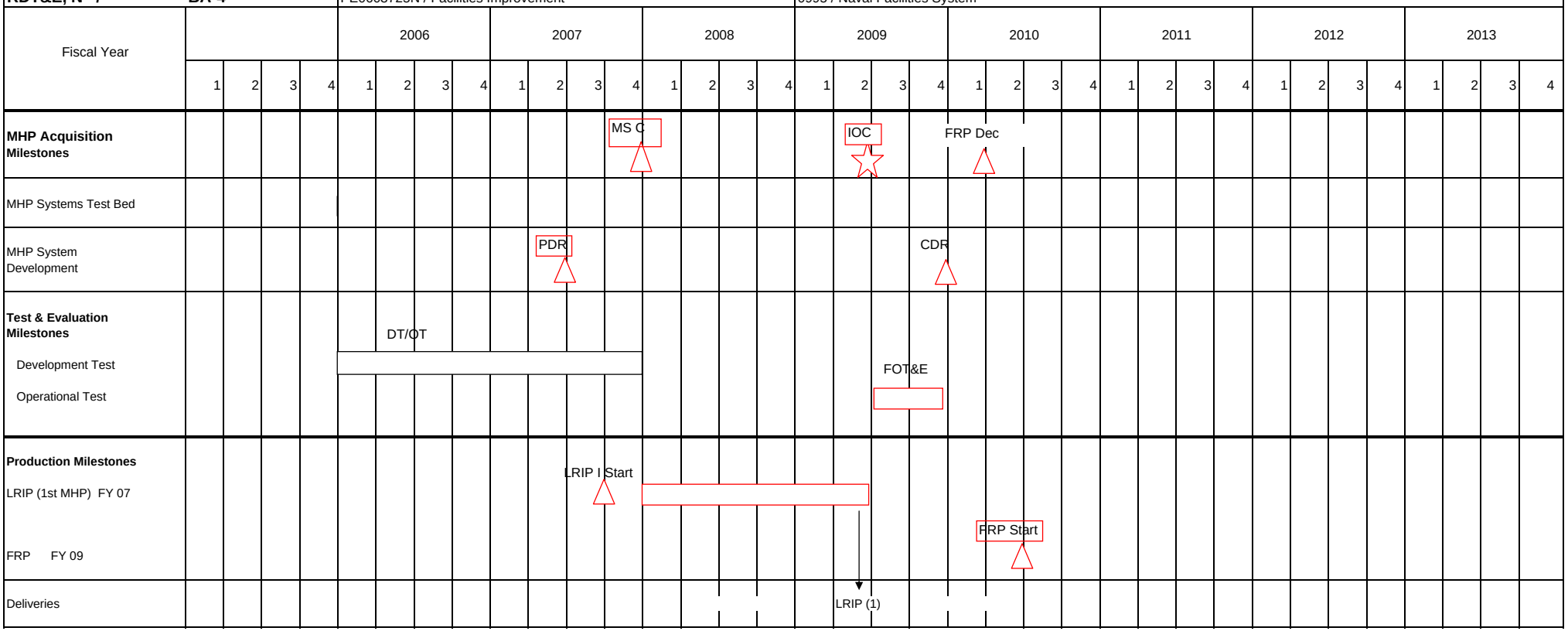
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)													DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995 / Naval Facilities System								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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: 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	
Remarks: Not applicable.														
Total Cost			13.025	1.435		1.691		1.738		1.800		0.000	19.689	
Remarks:														

(Exhibit R-3, page 2 of 2)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Naval Facilities System



R-4 Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995 / Naval Facilities System					
Schedule Profile (MHP)		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestone II (MSII)									
MHP Systems (Test Bed) Development									
Combined Developmental/Operational Testing (DT/OT)		1Q-4Q	1Q-4Q						
Preliminary Design Review (PDR)			2Q						
Milestone C (MS C)			4Q						
Start Low-Rate Initial Production I (LRIP)			3Q						
Low-Rate Initial Production Delivery					2Q				
Follow-On Operational Test & Evaluation (FOT&E)					3Q-4Q				
IOC				3Q					
Critical Design Review (CDR)				4Q					
Full Rate Production (FRP) Decision						1Q			
Full Rate Production Start						2Q			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 3155 Force Protection Ashore			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost (3155)	**4.549**	**2.488**	**2.393**	**2.290**	**2.210**	**2.112**	**2.150**	**2.185**
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:

(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.

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY 07 Pres Controls)	2.584	2.497	2.408	2.273
Current DOD Budget (FY08/09 PRESBUD Controls)	4.549	2.488	2.393	2.290
Total Adjustments	1.965	-0.009	-0.015	0.017
Summary of Adjustments				
Congressional Add (9A11)	2.000			
Congressional and Economic Adjustments	-0.035	-0.009	-0.015	0.017
Subtotal	1.965	-0.009	-0.015	0.017

(Exhibit R-2a, Page 1 of 3)

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	3155 Force Protection Ashore

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
	4.549	2.488	2.393	2.290
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

FY 06: Develop, demonstrate and validate the following technologies to improve installation protection and reduce the cost of ATFP operations :
- Complete preliminary demonstration of a transient vehicle & driver document recognition system for access control to Navy bases.
- Develop concepts, based on human systems integration, for fusing ATFP data from multiple sources to enable rapid situational awareness and reduce skills and manning of operations centers.
- Develop modeling applications to enable the economical assessment and optimization of ATFP subsystems in surveillance (detection and assessment), delay (e.g., barriers), and response.
- Develop concepts of layered security defense/protection using available, emerging , and potential technology to overcome current limitations.
- Develop Port Security Barrier systems utilizing composite materials and flexible structural members; and to significantly reduce operational & maintenance costs.
- Develop efficient assessment algorithms for effective blast protection and improved personnel safety in critical structures.

FY 07: Continue with demonstrations and validation of technical solutions to security enhancement and cost reduction of base installations.
- Demonstrate and transition transient vehicle & driver validation system and on-base vehicle/cargo tracking security system.
- Develop and transition user interfaces for presenting the multiple source situational awareness data to monitoring and decision-making personnel in ATFP command centers.
- Demonstrate analytical tools that enable the performance optimization or cost minimization of base security with proposed suites of equipment.
- Demonstrate and transition to design methodologies for perimeter security design that are validated and optimized for reducing base vulnerability. Formulate concepts for future technology based systems for spiral 2 capability.
- Initiate investigation of intelligent imaging systems to include long range EO imaging, artificially illuminated night vision systems and intelligent long range identification and target tracking algorithms.
- Demonstrate effective boat barriers that are easier to transport, deploy and install yet provide cost effective protection.

FY 08: Continue developments and demonstrations of advanced concepts to ATFP problems.
- Integrate situational awareness data among various types of operation centers, and demonstrate reductions in individual skills and crew size of operators while watching standards.
- Demonstrate the effective use of modeling tools to evaluate ATFP advanced components' prototypes within installations protection.
- Demonstrate advanced floating barriers of superior durability, and decrease operating and maintenance costs.
- Validate blast protection algorithms by comparing predicted response with actual field test data.
- Transition from anticipated Science and Technology (S&T) into this program. Potential candidates are: 1) Installation surveillance with intelligent imaging technology, 2) installation protection from swimmers and/or intruders.

FY 09: Continue or complete prior efforts and initiate as follows:
- Spiral 2 systems development for emergency and regional operation centers to enhance efficiency of manpower.
- Development of remote control application of the opening and closing of floating security barriers to reduce operating costs.
- Transition from S&T programs: Development of advanced prototype perimeter security systems using low cost and reliable ground sensors; Demonstration of the integration of advanced, stand-off explosive detection systems at installation entrances, to enhance the safety of personnel; integration of advanced robotic technology to delivery systems in hazardous or post attack scenarios to improve safety and efficiency.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603725N / Facilities Improvement	3155 Force Protection Ashore	

C. Other Program Funding Summary:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
P-1 Procurement Line item No., Name:										
812800 Physical Security Equipment	110.099	110.644	55.405	75.679	75.679	75.534	55.314	28.108	Con't	Con't
C-1 MILCON Project No. & Name. Not applicable.										
(U) RELATED RDT&E:										

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 CA
Naval Air Warfare Center (NAWC) China Lake CA

(Exhibit R-2a, Page 3 of 3)

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE:
February 2007

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

PROGRAM ELEMENT
PE0603725N / Facilities Improvement

PROJECT NUMBER AND NAME
3155 Force Protection Ashore

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Force Protection Ashore	WR	NFESC, Port Hueneme, CA	0.000	1.759	02/06	1.298	10/06	0.983	10/07	1.090	10/08	Cont.	Cont	
Force Protection Ashore	WR	NSWC Panama City & Dahlgr	0.000	0.190	02/06	0.190	10/06	0.200	11/07	0.200	10/08	Cont.	Cont	
Force Protection Ashore	WR	NAWC CHINA LAKE	0.000	0.000	02/06	0.000	11/06	0.200	11/07	0.000	10/08	Cont.	Cont	
Force Protection Ashore	WR	SSC San Diego	0.000	0.400	02/06	0.800	10/06	0.800	11/07	1.000	10/08	Cont.	Cont	
Force Protection Ashore	WR	Naval Post Graduate School	0.000	0.200	02/06	0.200	11/06	0.210	11/07					
Force Protection Ashore	WX	NFESC, Port Hueneme, CA	0.000	2.000	09/06									
			0.000	4.549		2.488		2.393		2.290		TBD	TBD	

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				0.000	0.000	

Remarks: Included in Product Development costs.

(Exhibit R-3, page 1 of 2)

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)													DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 Force Protection Ashore								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	NA													
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	4.549		2.488		2.393		2.290		0.000	0.000	
Remarks:														

(Exhibit R-3, page 2 of 2)

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	0995/ Naval Facilities System

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9859N				
Regenerative Fuel Cell Back-up Power	1.150	1.096	0.000	0.000
RDT&E Articles Quantity	1	1	N/A	N/A

(U) Improve the efficiency and economy of fuel cells in standby power ashore.

	FY 06	FY 07	FY 08	FY 09
9A11N				
Advanced Tech to Reduce Vulnerability of Military Inst	0.000	1.992	0.000	0.000
RDT&E Articles Quantity	N/A	1	N/A	N/A

(U) Accelerate improvements in the security of people and critical defense assets in Navy Region Northwest by adapting, developing, integrating, validating, piloting and accelerating the use of advanced technology solutions. The environmental factors imposed in this area, in addition to the close proximity of civilian communities and commerce, increase the challenges of implementing effective security technology. Existing technologies and emerging technology developments can be the basis for lower cost and more effective solutions not immediately accessible or visible to military planners.

	FY 06	FY 07	FY 08	FY 09
9A12N				
Permanent Magnet Linear Generator Power Buoy Sys	0.000	0.996	0.000	0.000
RDT&E Articles Quantity	N/A	1	N/A	N/A

(U) Demonstrate the performance of a long range night vision device that provides high image resolution for security surveillance in Anti-Terrorism Force Protection Ashore.

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603739N, NAVY LOGISTIC PRODUCTIVITY		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	19.863	24.612	3.547	2.846	2.980	3.107	3.165	3.224
2920 Ordnance Management	5.678	3.660	.947					
2955 JEDMICS	2.864	2.622	2.600	2.846	2.980	3.107	3.165	3.224
9999 CONGRESSIONAL ADDS	11.321	18.330						

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

Ordnance Management 2920 Covers the conversion of Naval Ammunition Logistics Center (NALC) systems to the Ordnance Information Systems(OIS).

JEDMICS 2955 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 106,000,000 engineering images and has 25,000 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 19 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.

Congressional Adds 9999

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603739N, NAVY LOGISTIC PRODUCTIVITY

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:	20.575	6.306	3.641	2.906
Current BES:	19.863	24.612	3.547	2.846
Total Adjustments	-0.712	18.306	-0.094	-0.060

Summary of Adjustments				
Congressional Reductions	-0.114			
Congressional Rescissions				
Congressional Undistributed Reductions	-0.598	-0.094		
Congressional Increases		18.400		
Economic Assumptions			0.022	0.022
Miscellaneous Adjustments			-0.116	-0.082
Subtotal	-0.712	18.306	-0.094	-0.060

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAM 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME 2920 Ordnance Management

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	5.678	3.660	.947					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	2920 Ordnance Management	

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	5.678			
RDT&E Articles Quantity				

NALC software development, training development, and configuration management for the following OIS systems: PHS&T, Joint Sentencing Toolkit, Weapons Maintenance Support, Explosive Safety etc.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost		3.660	0.947	
RDT&E Articles Quantity				

NALC software development, training development, and configuration management for the following systems: PHS&T, Production / Industrial Base Support and Weapons Allocation Capability.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 2955, JEDMICS	

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2955 JEDMICS	2.864	2.622	2.600	2.846	2.980	3.107	3.165	3.224
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM
JUSTIFICATION: 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 106,000,000 engineering images and has 25,000 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 19 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.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

JEDMICS Development	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	2.602	2.344	2.397	2.641
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.

JEDMICS Test	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.045	.045	.045	.045
RDT&E Articles Qty				

Conduct test and readiness reviews and functional performance tests on JEDMICS system.

JEDMICS Evaluation & Review	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.217	.233	.158	.160
RDT&E Articles Qty				

Conduct technical evaluations and configuration control reviews of JEDMICS system

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
Not Applicable										

D. ACQUISITION STRATEGY: Execution of sole-source negotiated requirements type contract for engineering, design, development and test efforts, Performance-based reviews conducted quarterly by the Project Management Office.

Exhibit R-3 Cost Analysis (page 1)									DATE: February 2007			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4		PROGRAM ELEMENT 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
SUBTOTAL PRODUCT DEVELOPMENT												

Remarks:

SUPPORT												
Software Development	VARIOUS	VARIOUS	10.469								10.469	
Software Development	SS-ID/REQ	NORTHROP GRUMMAN INFORMATION TECHNO	2.602	2.344	Nov 2006	2.397	Nov 2007	2.641	Nov 2008	17.874	27.858	27.858
SUBTOTAL SUPPORT			13.071	2.344		2.397		2.641		17.874	38.327	

Remarks: Funds are for development efforts associated with Commercial Off The Shelf (COTS) obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Infomation & Control System (JEDMICS). Funds are for COTS evaulation, 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.

Exhibit R-3 Cost Analysis (page 1)			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 2955, JEDMICS	

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
TEST & EVALUATION												
Dev Test & Eval	VARIOUS	VARIOUS	2.288	.045	Oct 2006	.045	Oct 2007	.045	Oct 2008	.270	2.693	
SUBTOTAL TEST & EVALUATION			2.288	.045		.045		.045		.270	2.693	

Remarks: Supports testing and evaluation of baseline releases in a user environment.

MANAGEMENT												
Government Eng Sup	VARIOUS	VARIOUS	.860	.184	Oct 2006	.108	Oct 2007	.109	Oct 2008	.661	1.922	
Program Mgmt Sup	WX	VARIOUS	.149	.005	Oct 2006	.005	Oct 2007	.005	Oct 2008	.036	.200	
Travel	VARIOUS	VARIOUS	.153	.044	VARIOUS	.045	VARIOUS	.046	VARIOUS	.297	.585	
SUBTOTAL MANAGEMENT			1.162	.233		.158		.160		.994	2.707	

Remarks: Supports requirements management at the Prime Contractor location and program related travel by government employees.

Total Cost			16.521	2.622		2.600		2.846		19.138	43.727	

CLASSIFICATION:

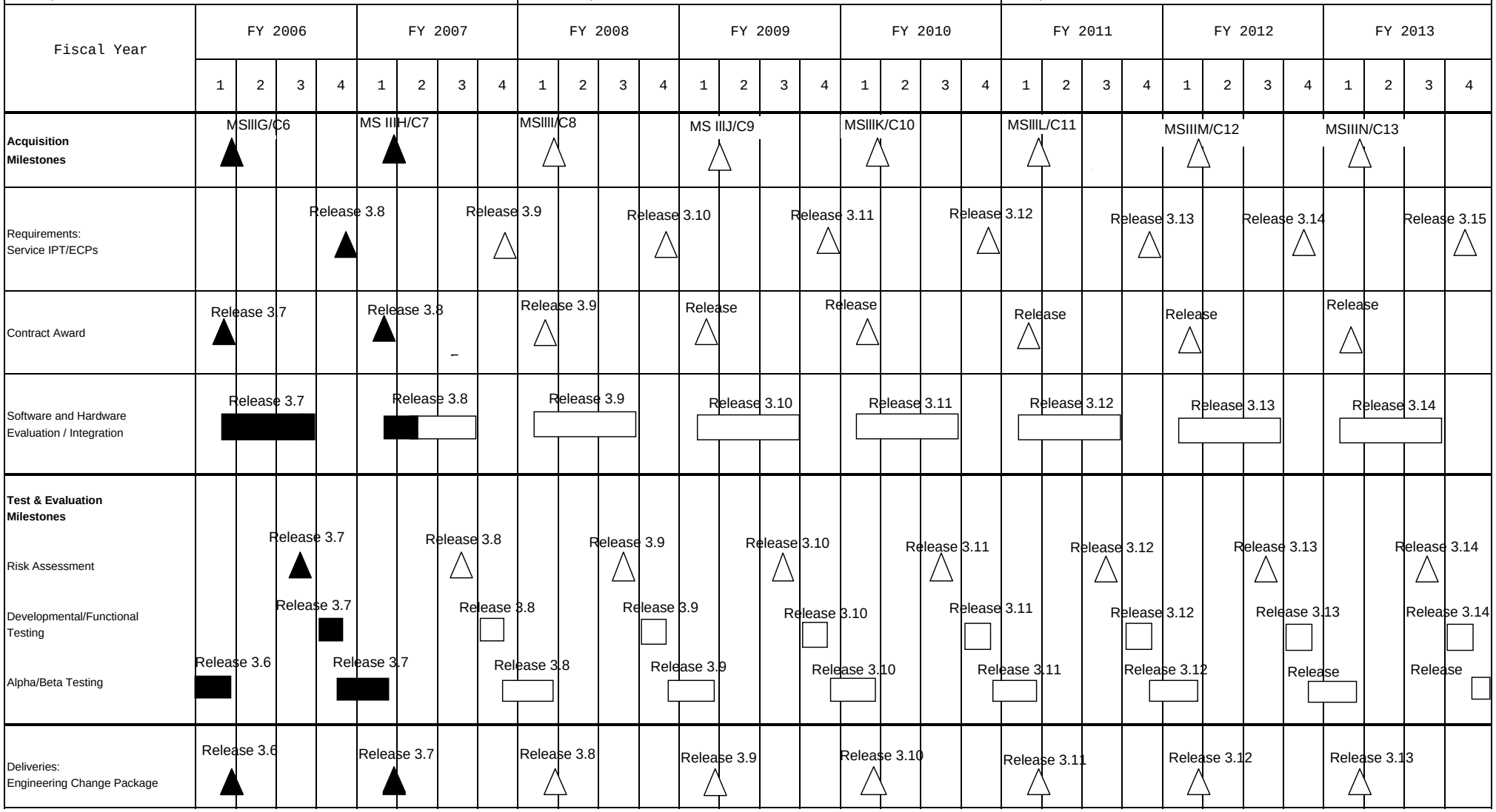
EXHIBIT R4, Schedule Profile

DATE: February 2007

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

PROGRAM ELEMENT NUMBER AND NAME: 0603739N, NAVY LOGISTIC PRODUCTIVITY

PROJECT NUMBER AND NAME: 2955, JEDMICS



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Alpha/Beta Testing Release 3.6	1Q							
Engineering Change Package Release 3.6	1Q							
Milestone IIIG or C6 (MSIIIG/C6) Release 3.6	1Q							
Contract Award Release 3.7	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 IIIH or C7 (MSIIIH/C7) Release 3.7		1Q						
Contract Award Release 3.8		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 IIII or C8 (MSIIII/C8) Release 3.8			1Q					
Contract Award Release 3.9			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 IIIJ or C9 (MSIIIJ/C9) Release 3.9				1Q				
Contract Award Release 3.10				1Q				
Software Hardware Evaluation/Integration Release 3.10				1Q-3Q				
Risk Assessment Release 3.10				3Q				
Developmental/Functional Testing Release 3.10				4Q				
Service IPT/ECPs Release 3.11				4Q				
Alpha/Beta Testing Release 3.10				4Q	1Q			
Engineering Change Package Release 3.10					1Q			

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0603739N, NAVY LOGISTIC PRODUCTIVITY				PROJECT NUMBER AND NAME 2955, JEDMICS			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Milestone IIIK or C10 (MSIIIK/C10) Release 3.10					1Q			
Contract Award Release 3.11					1Q			
Software Hardware Evaluation/Integration Release 3.11					1Q-3Q			
Risk Assessment Release 3.11					3Q			
Developmental/Functional Testing Release 3.11					4Q			
Service IPT/ECPs Release 3.12					4Q			
Alpha/Beta Testing Release 3.11					4Q	1Q		
Engineering Change Package Release 3.11						1Q		
Milestone IIIL or C11 (MSIIIL/C11) Release 3.11						1Q		
Contract Award Release 3.12						1Q		
Software Hardware Evaluation/Integration Release 3.12						1Q-3Q		
Risk Assessment Release 3.12						3Q		
Developmental/Functional Testing Release 3.12						4Q		
Service IPT/ECPs Release 3.13						4Q		
Alpha/Beta Testing Release 3.12						4Q	1Q	
Engineering Change Package Release 3.12							1Q	
Milestone IIIM or C12 (MSIIIM/C12) Release 3.12							1Q	
Contract Award Release 3.13							1Q	
Software Hardware Evaluation/Integration Release 3.13							1Q-3Q	
Risk Assessment Release 3.13							3Q	
Developmental/Functional Testing Release 3.13							4Q	
Service IPT/ECPs Release 3.14							4Q	
Alpha/Beta Testing Release 3.13							4Q	1Q
Engineering Change Package Release 3.13								1Q
Milestone IIIN or C13 (MSIIIN/C13) Release 3.13								1Q
Contract Award Release 3.14								1Q
Software Hardware Evaluation/Integration Release 3.14								1Q-3Q
Risk Assessment Release 3.14								3Q
Developmental/Functional Testing Release 3.14								4Q
Service IPT/ECPs Release 3.15								4Q
Alpha/Beta Testing Release 3.14								4Q

EXHIBIT R-2a, RDT&E Project Justification									DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
CONGRESSIONAL ADDS		11.321	18.330						
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: CONGRESSIONAL ADDS

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

2767C Improve Equipment Sustainability	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	4.128			
RDT&E Articles Qty				

FY 2006 - Collaborative Logistics Productivity (CLP) $4.128
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.

9047C JEDMICS Enhancements	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	2.587			
RDT&E Articles Qty				

Joint Engineering Data Management Information and Control System (JEDMICS): Complied with Congressional direction for Technical Data Management Enhancements.

9540C Support NLRRC	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.960			
RDT&E Articles Qty				

FY 2006 - Navy Logistics Readiness Research Center (NLRRC) $.960
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.

9541C SEALEGS	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	1.726			
RDT&E Articles Qty				

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.
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.

9787N Container Tracking	FY 2006	FY 2007	FY 2008	FY 2009

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY		PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS

Accomplishments / Effort / Sub-total Cost	.960			
RDT&E Articles Qty				

FY 2006 - AIT Enabled Activation Pack-up Kits $.960
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.

9788N Lead Free Components	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	.960			
RDT&E Articles Qty				

FY 2006 - Logistics Impact of lead free circuits and components $.960
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.

9A13N Information Sharing	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		3.885		

FY 2007 - Defense Integrated Technical Data Center $3.885 - This program will create an infrastructure with a set of applications to facilitate the sharing of weapons system product information between the members of the engineering and logistics communities to improve shipboard maintenance processes and sustain shipboard readiness. This will be accomplished by creating access within a single tool to critica technical (manuals, data packages, drawings, equipment configuration data, etc.) and supply (asset availability) information required to support the afloat maintenance process.

9A14N Fiber Optic Technology	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost		1.096		
RDT&E Articles Qty				

Fiber Optic Components for Military Applications $1.096
The purpose of this add is to develop fiber optic components for military aerospace applications and to obviate future maintenance and logistics problems through fiber optics/photonics.

9A15N Fiber Optic Technology	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost		1.793		
RDT&E Articles Qty				

Fiber Optic Interconnect Technology $1.793
The purpose of this add is to develop low cost, high quality fiber optic interconnect technology for military aerospace applications and to obviate future maintenance and logistics problems through fiber optics/photonics.

9A16N	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		1.445		

High Density Power Electronics - $1.445 - Scope of Funding is Unknown.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N, NAVY LOGISTIC PRODUCTIVITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS

9A17N Infrared Sensors	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost		3.238		
RDT&E Articles Qty				

Multi-color infrared sensors $3.238
A continuation of the FY06 Service Life Extension of Avionics Legacy Equipment with Guaranteed System (SEALEGS) program, previously 9541C.

9A18N Logistics Innovation	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		.996		

FY 2007 Navy Operational Logistics Innovation - $.996 - Congress appropriated and authorized $1.0M for Navy Operational Logistics Innovation (NOLI) in FY 2007. The NOLI initiative will be a catalyst for identification, development, and implementation of technology based solutions that meet strategic Navy needs. The Navy must develop command and control logistics functionalities that fully utilize sensors, identification technology and distance support capability to turn raw logistics and maintenance significant data into actionable information for the operational commanders. This will allow the Navy to integrate previously stove-piped functions and data sources to achieve the operational agility and reduced force structure envisioned in DoD Transformation.

9A19N Lead Free Circuits	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		1.295		

FY 2007 - Reliability Testing of Lead Free Circuits/Components - $1.295 - Congress appropriated and authorized $1.3M for this program in FY 2007. As a result of European Council legislation which will immediately cause most manufacturers to use lead-free platings or alternative components on their manufactured components, there is a need for reliability research and product testing as it relates to the impact of this change on military hardware and relevant applications. In response to this need, a Reliability Research and Testing Program is proposed to address the product reliability problems that the military will face. A cornerstone of the program will be the development of a reliability testing laboratory within the Purdue Technology Center of Northwest Indiana. The development of this program and laboratory will assist in determining the impact of new material components and new processors on legacy military equipment of critical national importance.

9A20N Track Items	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		3.586		

FY 2007 - Unique Identification Of Tangible Items - $3.586 - The UID Policy is an OSD mandate that will, once implemented, provide a means to track items from cradle to grave and provide the means to track the requirement footprint, streamline vendor payment via the Supply Chain, and provide procurement accountability.

9A21N	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost				
RDT&E Articles Qty		.996		

FY 2007 - Wireless Maritime Inspection System - $.996 - Scope of Funding is Unknown.

EXHIBIT R-2, RDT&E Budget Item Justification 39114 DATE: FEBRUARY 2007

APPROPRIATION/BUDGET ACTIVITY
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4

R-1 ITEM NOMENCLATURE
0603755N/SHIP SELF DEFENSE

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**10.772**	**8.863**	**10.954**	**11.010**	**10.864**	**10.868**	**10.833**	**10.783**
2133/QRCC/RAWG	**3.487**	**3.478**	**3.567**	**3.606**	**3.731**	**3.792**	**3.814**	**3.885**
2184 Force Advanced Warfare Concept Technology (FA	**7.285**	**1.981**	**7.387**	**7.404**	**7.133**	**7.076**	**7.019**	**6.898**
3160 Ocean Surveillance	**0.000**	**3.404**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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 FY07, under the FACT, Project 2184, the Innovation Team will continue efforts to transition the JTAAC capability within the USN. During FY06, the Innovation Team expanded 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, under the Ocean Surveillance Initiative, Project 3160, the Innovation Team will continue leverage 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. FACT and Ocean Surveillence efforts will combine and continue under Project 2184 in FY08.

B. PROGRAM CHANGE SUMMARY:

Funding:	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**
FY 2007 President's Budget	9.447	8.897	11.392	12.579
FY 2008 President's Budget	10.772	8.863	10.954	11.01
Total Adjustments	1.325	-0.034	-0.438	-1.569
Summary of Adjustments				
Other general provisions	-0.175	0.000	0.000	0.000
Programmatic Changes	1.500	-0.034	-0.438	-1.569
Subtotal	1.325	-0.034	-0.438	-1.569

Schedule: N/A

Technical: N/A

EXHIBIT R-2a, RDT&E Project Justification

DATE: **FEBRUARY 2007**

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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**3.487**	**3.478**	**3.567**	**3.606**	**3.731**	**3.792**	**3.814**	**3.885**
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification (Page 1)			DATE: **FEBRUARY 2007**
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 Grp	

B. Accomplishments/Planned Program

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	3.487	0.000	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.

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	0.000	3.478	0.000	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.

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	3.567	0.000
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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification (Page 2)			DATE: **FEBRUARY 2007**
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 Grp	

C. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	3.606
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.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **FEBRUARY 2007**
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	

C. OTHER PROGRAM SUMMARY: Not Applic N/A

D. ACQUISITION STRATEGY: N/A

E. MAJOR PERFORMERS:

Dahlgren/ NSWCDD - Responsible for overall combat systems performance analysis for Navy ship classes.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **FEBRUARY 2007**

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

PROGRAM ELEMENT: 0603755N/SHIP SELF DEFENSE

PROJECT NUMBER AND NAME: 2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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	3.577	3.487	10/05	3.478	10/06	3.567	10/07	3.606	10/08	Continuing	Continuing	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			3.577	3.487		3.478		3.567		3.606		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	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **FEBRUARY 2007**

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

PROGRAM ELEMENT: 0603755N/SHIP SELF DEFENSE

PROJECT NUMBER AND NAME: 2133 Quick Reaction Combat Capability/Requirements and Analysis Working Group

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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			3.577	3.487		3.478		3.567		3.606		Continuing	17.715	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile: **NOT APPLICABLE**			DATE:
	N/A		**FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	2133 QRCC/RAWG	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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																																
Test & Evaluation Milestones																																
Production Milestones																																
Deliveries																																

Exhibit R-4a, Schedule Detail **NOT APPLICABLE**						DATE: **FEBRUARY 2007**		
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
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								

EXHIBIT R-2a, RDT&E Project Justification

DATE: **FEBRUARY 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	2184 Force Advanced Warfare Concept Technology (FACT)

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**7.285**	**1.981**	**7.387**	**7.404**	**7.133**	**7.076**	**7.019**	**6.898**
RDT&E Articles Qty								

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 expanded 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 in and begin the follow-on FACT initiative in FY10.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	2184 Force Advanced Warfare Concept Technology (FACT)

B. Accomplishments/Planned Program

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	7.285	1.981	7.387	7.404
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. FACT and Ocean Surveillence efforts will combine and continue under Project 2184 in FY08. On-going development of an Ocean Serveillance 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 correc classification of small and medium sized vessels at sea state 5. Conduct critical experiments in support of the Ocean Surveillance initiative. Provide top level programmactic support, technical analysis and assist in the development processess, procedures and documentation that impact the execution of the Ocean Surveillance Initiative

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	2184 Force Advanced Warfare Concept Technology (FACT)	

C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

D. ACQUISITION STRATEGY: Not Applicable

E. MAJOR PERFORMERS: APL/Laurel, MD 11/02

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **FEBRUARY 2007**

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

PROGRAM ELEMENT: 0603755N/SHIP SELF DEFENSE

PROJECT NUMBER AND NAME: 2184 Force Advanced Warfare Concept Technology (FACT)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/Laurel, MD	99.536	7.285	11/05	1.981	11/06	7.387	11/07	7.404	11/08	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			101.484	7.285		1.981		7.387		7.404		**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:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **FEBRUARY 2007**

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

PROGRAM ELEMENT: 0603755N/SHIP SELF DEFENSE

PROJECT NUMBER AND NAME: 2184 Force Advanced Warfare Concept Technology (FACT)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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		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		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		0.000		CONT	CONT	
Travel													0.000	
Labor (Research Personnel)													0.000	
Subtotal Management			1.206	0.000		0.000		0.000		0.000		CONT	CONT	
Remarks:														
Total Cost			105.760	7.285		1.981		7.387		7.404		CONT	CONT	
Remarks:														

EXHIBIT R4, Schedule Profile:	DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE
PROJECT NUMBER AND NAME 2184 Force Advanced Warfare Concept Technology (FACT)	

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
					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 △							End △																								
Support Transtion of JTAAC	Begin △							End △																								
Begin Ocean Surveillance Initiative					Begin △			Initial Concept Demo	△		Exercise Prototype Capability		△			End △	△														
Follow-on FACT Initiative																	Begin △															

Exhibit R-4a, Schedule Detail: **NOT APPLICABLE**						DATE: **FEBRUARY 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME 2184 Force Advanced Warfare Concept Technology (FACT)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Continued Support of GWOT Operations	continued							
Begin Transition of JTAAC Within USN	1Q							
Conclude Suppot of GWOT Operations		4Q						
Conclude Transition of JTAAC Within USN		4Q						
Begin Ocean Surveillance Initiative		1Q						
Initial Concept Demo			1Q					
Exercise Prototype Capability				1Q				
Conclude Ocean Surveillance Initiative				4Q				
Begin Follow-On FACT Initiative					1Q			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **FEBRUARY 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**3.404**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

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. FACT and Ocean Surveillence efforts will combine and continue under Project 2184 in FY08.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	3160 Ocean Surveillance Initiative

B. Accomplishments/Planned Program: (combined under Project Number 2184 Force Advanced Warfare Concept Technology (FACT)

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	**0.000**	**3.404**	**0.000**	**0.000**
RDT&E Articles Quantity				

On-going development of an Ocean Serveillance 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 programmactic support, technical analysis and assist in the development processess, procedures and documentation that impact the execution of the Ocean Surveillance Initiative. FACT and Ocean Surveillence efforts will combine and continue under Project 2184 in FY08.

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	3160 Ocean Surveillance Initiative	

C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

D. ACQUISITION STRATEGY: Not Applicable

E. MAJOR PERFORMERS: (combined under Project Number 2184 Force Advanced Warfare Concept Technology (FACT))

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **FEBRUARY 2007**

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 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/Laurel, MD	0.000	0.000	11/05	3.404	11/06	0.000	11/07	0.000	11/08	3.404	3.404	
Systems Engineering														
Systems Engineering														
Systems Engineering														
Systems Engineering														
Miscellaneous														
Pontoon Barrier														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			0.000	0.000		3.404		0.000		0.000		3.404	3.404	

Remarks:

Development Support														
Software Development														
Integrated Logistics Support														
Integrated Logistics Support														
Integrated Logistics Support														
Technical Data														
GFE														
Award Fees														
Subtotal Support														

Remarks:

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0603790N
PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

COST: (Dollars in Thousands)

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
Total PE	9,912	9,741	9,934	10,135	10,383	10,630	10,828	11,032
2293 NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)	9,912	9,741	9,934	10,135	10,383	10,630	10,828	11,032

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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0603790N
PROGRAM ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

B. PROGRAM CHANGE SUMMARY:

	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget Submission	10,174	9,784	10,171	10,315
Congressional Undistributed Reductions/Rescissions	4	-43	0	0
Functional Realignment for OPNAV Program Support Costs	-180	0	0	0
Non-Pay Inflation Adjustments	0	0	-16	22
Program Adjustments	0	0	-228	-212
Rate Adjustments	0	0	7	10
SBIR Assessment	-86	0	0	0
FY 2008/FY 2009 President's Budget Submission	9,912	9,741	9,934	10,135

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%.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

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 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
2293 NATO COOPERATIVE RESEARCH AND DEVELOPMENT (R&D)	9,912	9,741	9,934	10,135	10,383	10,630	10,828	11,032

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 2006	FY 2007	FY 2008	FY 2009
COOPERATIVE PROJECTS	9,912	9,741	9,934	10,135

FY 2006 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 Advanced Hull Materials and Structures Technology (AHM&ST) cooperative project between the U.S. and Japan.

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)

• Continued to support the multilateral cooperative project concerning Coalition Maritime Missile Defense BMC4I Architecture Definition.
• Continued to support the multilateral cooperative project concerning Maritime Missile Defense Modeling and Simulation.
• 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 cooperative project between the U.S. and Australia regarding Multiplexed Fiber Laser Sensors.
• Supported the cooperative project between the U.S. and Japan regarding S-Bank Radar.
• Supported the cooperative project between the U.S. and Japan regarding Open Architecture.
• Supported the cooperative project between the U.S. and Australia regarding the Australia/U.S. Distributed Engineering Plan (AUSDEP).

FY 2007 Plans:

• Continue to support FY06 projects, and similar projects.
• Initiate support for the multilateral cooperative project regarding Maritime Missile Defense Modeling and Simulation.
• Initiate support for the multilateral cooperative project regarding Open Architecture Radar Interface Standard Project (OARIS).
• Initiate support for the cooperative project between the U.S. and Germany regarding Torpedo Countermeasures ELF Sensor System.
• Initiate support for the cooperative project between the U.S. and the U.K. regarding Torpedo Guidance and Control.
• Initiate support for the cooperative project between the U.S. and the Netherlands regarding Failure Prediction of Composite and Hybrid Naval Structures (DYCOSS 3D).

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)

• Initiate support for the cooperative project between the U.S. and Singapore regarding Comprehensive Maritime Awareness (CMA) Joint Capability Technology Demonstration.
• Initiate support for the cooperative project between the U.S. and the Republic of Korea regarding Low Cost Guided Imaging Rocket.
• Initiate support for the cooperative project between the U.S. and Singapore regarding Infrared Hyperspectral Imaging at Wavelengths Beyond 3um.

FY 2008 Plans:

• Continue to support FY07 projects, and similar projects.

FY 2009 Plans:

• Continue to support FY08 projects, and similar projects.

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.

FY 2008/2009 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2007
Exhibit R-3

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	FY 2006	FY 2007	FY 2008	FY 2009
a. Cooperative Research and Development	9,912	9,741	9,934	10,135

B. BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION:

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2006 Budget	FY 2007 Budget	FY 2008 Budget	FY 2009 Budget	To Complete	Total Program
Product Development										
NAVSEA	PD				5,013	4,100			CONT.	CONT.
NSWC	WX				51	950			CONT.	CONT.
NUWC	WX				2,681	950			CONT.	CONT.
SPAWAR	WX				194				CONT.	CONT.
Withhold					61					
Miscellaneous					1,912	3,741	9,934	10,135	CONT.	CONT.
Total					9,912	9,741	9,934	10,135	CONT.	CONT.

FY 2008/2009 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2007
Exhibit R-3

BA: 04 PROGRAM ELEMENT: 0603790N
PROJECT ELEMENT TITLE: NATO RESEARCH AND DEVELOPMENT

Project Number: R2293
Project Title: NATO Cooperative R&D

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2006 Budget	FY 2007 Budget	FY 2008 Budget	FY 2009 Budget	To Complete	Total Program
Support and Management										

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2006 Budget	FY 2007 Budget	FY 2008 Budget	FY 2009 Budget	To Complete	Total Program
Test and Evaluation										

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 2006 Budget	FY 2007 Budget	FY 2008 Budget	FY 2009 Budget	To Complete	Total Program
Subtotal Product Development	9,912	9,741	9,937	10,135	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	9,912	9,741	9,934	10,135	CONT.	CONT.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: **February 2007**					
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE **0603795N/Land Attack Technology**							
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**73.307**	**56.257**	**31.021**	**40.044**	**28.856**	**18.007**	**17.540**	**17.857**
2156/Naval Surface Fire Support (NSFS)	**10.422**	**16.245**	**30.008**	**38.780**	**27.586**	**16.755**	**17.060**	**17.374**
2325/Naval Fires Control System (NFCS)	**3.295**	**2.255**	**1.013**	**1.264**	**1.270**	**1.252**	**0.480**	**0.483**
9999/Congressional Adds[(1)]	**59.590**	**37.757**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Quantity of RDT&E Articles & Cost (see attached projects)								

[(1)] Funding includes the following FY06 / FY07 Congressional Adds: Advanced XLR Medium Gun Demo Project 9051C - $2.308M/ $1.096M; Affordable Weapon System Project 9359C - $34.500M/ $15.541M; 57mm Gun Qualification & Test - Project 9542C - $8.058M/ $0; Millennium Gun System - Project 9362C - $3.942M/ $1.992M; Ballistic Trajectory Extended Range Munition - Project 9052C - $9.810M/ $11.955M; 76mm Medium Caliber Gun - Project 9829N - $.972M/ $1.792M Automated Explosive Safety Assessment Tool Project 9A22N - $0/ $0.996M; EX171 Extended Range Guided Munition EMD Project 9A23N- $0/ $2.192; Projectile Common Guidance Project- $0/ $2.192M.

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 gun systems that can provide the required range, lethality, accuracy, and responsiveness. The NSFS program (**Project 2156**) is developing a 5" Extended Range Munition (ERM) with a coupled Global Positioning System (GPS)/Inertial Navigation System (INS) and the 5"/62 gun (a modification of the existing 5"/54 gun). This munition will have the capability to deliver its payload to a range in excess of current conventional ammunition utilizing rocket assisted propulsion with associated propelling charge improvements. The Naval Fires Control System (NFCS) **(Project 2325)** automates shipboard land attack battle management duties to be interoperable and consistent with joint C4ISR systems. This shipboard system will significantly improve the Navy's ability to support OMFTS. The Advanced Medium Caliber Gun System (AMCGD) **(Project 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 9052C)** - 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 Weapon System (AWS) **(Project 9359C)** is a COTS based Land Attack and Strike mission 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 9362C)** - 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 9542C)** - 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 for 57mm MK 110 Mod 0 Gun System and engineering analysis. The 76mm Medium Caliber Gun **(Project 9829N)**. The 76mm Super Rapid Gun effort is comprised of an evaluation of both the gun and associated ammunition.
The EX-171 Extened Range Guided Munitions (ERGM) EMD (**Project 9A23N**). The ERGM EMD performs additional component level reliability tests in FY07. Perform flight test planning and test set-up activities in FY07 at White Sands Missile Range. (**Project 9A24N**). The Projectile Common Guidance (Project 9A24N). The Projectile Common Guidance program is to develop and implement a plan to integrate a lower cost Guidance Electronics Unit (GEU) in ERGM. Build initial circuit card prototypes.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	2156/NSFS, 2325/NFCS, 9999/Congressional Adds

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 06	FY 07	FY 08	FY 09
Previous President's Budget: (FY 07 Pres Controls)	73.983	18.571	29.797	40.089
Current BES/President's Budget (FY 08 Pres Controls):	73.307	56.257	31.021	40.044
Total Adjustments	-0.676	37.686	1.224	-0.045
Summary of Adjustments:				
Program Adjustment	-0.676	0.000	1.224	-0.045
Undistributed General Reductions	0.000	0.000	0.000	0.000
Misc. Adjustments	0.000	0.000	0.000	0.000
Congressional Undistributed Reductions	0.000	37.686	0.000	0.000
	-0.676	37.686	1.224	-0.045

Schedule:

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, Mk 160 Fire Control upgrades and the Naval Fires Control System. These together provide a significant enhancement to Naval Surface Fire Support. The funds provide for the development of two separate 5" guided projectiles; the Extended Range Guided Munition (ERGM) and the Ballistic Trajectory Extended Range Munition (BTERM), which are being designed to meet the ERM requirements. ERGM is being executed as a formal ACAT program while BTERM is a demonstration project via a Broad Agency Announcement awarded in May 04. The BTERM program will end in Feb 07 while the ERGM program will continue through System Development and Demonstration (SDD) leading to an FY11 IOC.

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support					
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**10.422**	**16.245**	**30.008**	**38.780**	**27.586**	**16.755**	**17.060**	**17.374**
RDT&E Articles Qty			**20**	**20**	**60 (option)**			

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 utilizing rocket assisted propulsion with associated propelling charge improvements. In FY07, a contract modification will be implemented for an extension of the ERGM System Development and Demonstration (SDD) to meet the ERM requirements. The SDD continues in FY08-09 leading to a Milestone C decision in FY10 and Initial Operational Capability in FY11.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

B. Accomplishments/Planned Program

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	10.422	16.245	30.008	38.780
RDT&E Articles Quantity			20	20

Continued ERGM development. Continued component testing, qualification efforts and flight tests. A contract modification for ERGM SDD will be implemented in 1Q FY07 leading to an FY11 IOC. In FY08, a 20 round reliability test will be performed. In FY09, qualification testing and Land Based Flight Tests will occur.

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	2.000
RDT&E Articles Quantity				

Continued integration and testing of 5” MK 45 modifications, Gun Fire Control modifications and required interfaces in support of the Extended Range Munition IOC .

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. OTHER PROGRAM FUNDING SUMMARY:

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	Complete	Cost
PAN,MC BL, 025300	0.000	0.000	0.000	0.000	20.000	20.000	64.013	92.979	CONT	
WPN BLI:4217, E5004	8.302	1.676	0.350	0.398	7.100	10.600	17.500	17.500	CONT	

D. ACQUISITION STRATEGY:

The ERM program will be continued via a contract modification in FY07 leading to a reliability test in FY08. In FY 09, qualification testing and Land Based Flight Testing will occur. Developmental Testing and Operational Testing (DT/OT) is planned in FY10 leading to IOC in FY11. BAE, the sole source manufacturer of the 5" MK 45 Gun Mount, is responsible for gun mount development efforts. The Naval Surface Warfare Center, Dahlgren is the development agent for the NK 160 Fire Control System.

E. MAJOR PERFORMERS:

Prime Contractor for ERGM development: Raytheon Missile Systems located in Tucson, AZ.

Prime Contractor for Gun development: BAE, formerly United Defense Limited Partnership (UDLP), located in Minneapolis, MN

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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603795N/Land Attack Technology

PROJECT NUMBER AND NAME: 2156/Naval Surface Fire Support

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Privatization[2]	CPAF	BAE, Louisville, KY (96C5432)	3.908	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	3.908	3.908
Primary Hardware Development[2]	CPIF/FF	BAE, Minneapolis, MN (96C5223)	58.738	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	58.738	59.657
	CPFF	BAE, Minneapolis, MN (01C4101)	9.872	0.000	N/A	0.000	N/A	0.000	N/A	1.500	11/08	CONT	CONT	48.414
ERM SDD	CPAF/IF	Raytheon, Tucson, AZ (06C5402)	188.397	7.861	03/06	13.483	11/06	24.983	11/07	30.550	11/08	CONT	CONT	202.921
	WR	NSWC Dahlgren, VA	57.704	0.000	N/A	0.000	N/A	0.000	N/A	0.500	VAR	CONT	CONT	N/A
	WR	NSWC Indian Head, MD	15.088	0.250	VAR	0.000	N/A	0.298	VAR	0.384	VAR	CONT	CONT	N/A
	WR	NSWC Port Hue., CA	25.386	0.000	N/A	0.000	N/A	0.298	VAR	0.384	VAR	CONT	CONT	N/A
BTERM II Demonstration[1]	CPIF/AF	ATK, Woodland Hills, CA (04C4302)	16.226	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	16.226	40262
	WX/WR	NSWC (Various)	1.622	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.622	N/A
Systems Engineering	WX/WR	NSWC (Various)	16.280	0.185	VAR	0.000	N/A	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	0.000	N/A	0.000	33.281	N/A
Award Fees	CPAF/IF	Raytheon, Tucson, AZ	3.369	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	3.369	4.915
Award Fees	CPIF/AF	ATK, Woodland Hills, CA	0.000	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.000	0.000
Subtotal Product Development			429.871	8.296		13.483		25.579		33.318		CONT	CONT	CONT
Development Support Equipment														
Software Development														
Training Development														
Integrated Logistics Support	WR/WX	NSWC (Various)	8.924	0.020	VAR	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Configuration Management														
Technical Data														
GFE														
Subtotal Support			8.924	0.020		0.000		0.000		0.000		CONT	CONT	CONT

[1] PU 9052 funding is included in target value of contract

[2] BAE was formerly known as UDLP

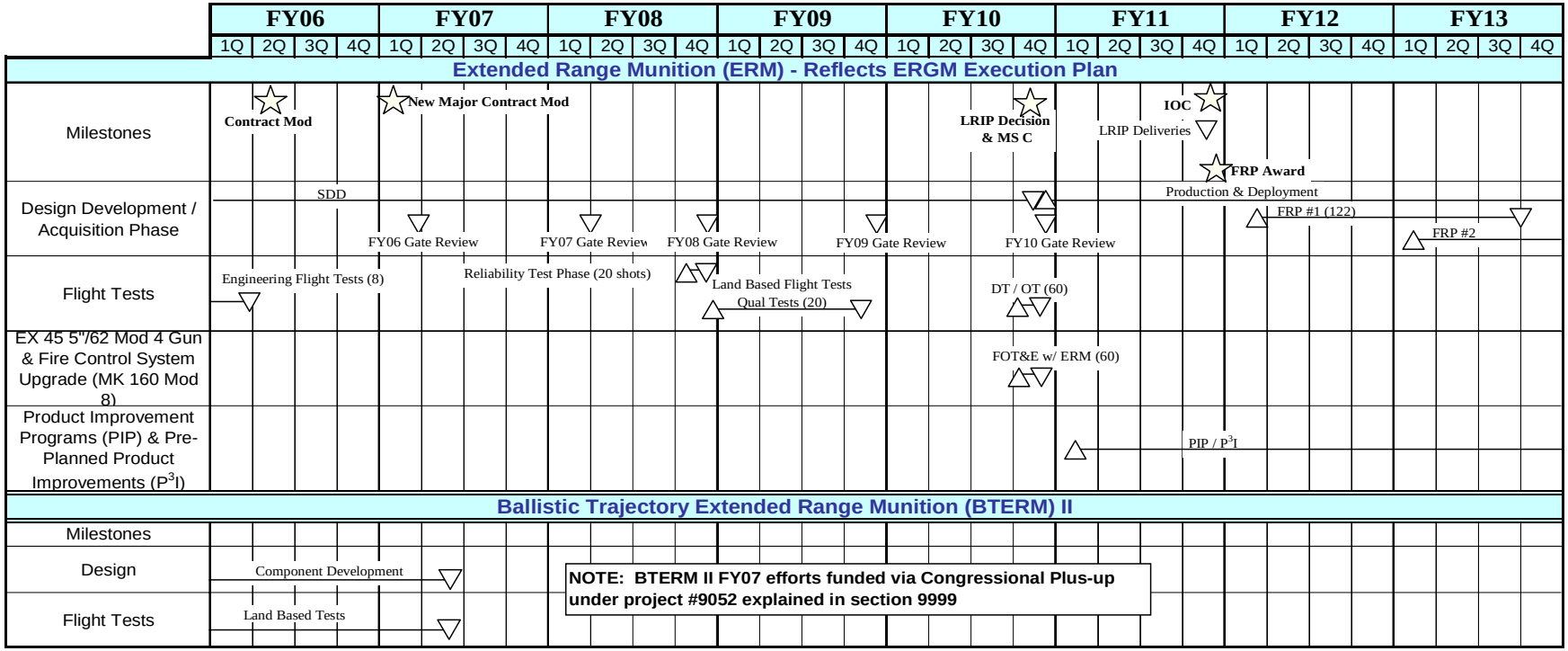
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: **February 2007**								
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**						PROJECT NUMBER AND NAME 2156/Naval Surface Fire Support								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC (Various)	37.913	0.720	VAR	0.788	VAR	1.492	VAR	1.922	VAR	CONT	CONT	N/A
Operational Test & Evaluation														
Tooling														
GFE														
Subtotal T&E			37.913	0.720		0.788		1.492		1.922		CONT	CONT	N/A
Contractor Engineering Support														
Government Engineering Support	WR/WX	NSWC (Various)	17.949	0.080	VAR	0.800	VAR	0.800	VAR	0.800	VAR	CONT	CONT	N/A
Project Engineering Support	WR/WX	NSWC (Various)	7.941	0.368	VAR	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Program Management Support	WR/WX	Various	14.096	0.950	VAR	1.124	VAR	2.087	VAR	2.690	VAR	CONT	CONT	N/A
Travel	PD	NAVSEA HQ	1.128	0.008	VAR	0.050	VAR	0.050	VAR	0.050	VAR	CONT	CONT	N/A
Labor (Research Personnel)														
Overhead														
Subtotal Management			41.114	1.406		1.974		2.937		3.540		CONT	CONT	N/A
Total Cost			**517.822**	10.442		16.245		30.008		38.780		CONT	CONT	CONT

Remarks:

EXHIBIT R-4, Schedule Profile		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603795N/Land Attack Technology	PROJECT NAME AND NUMBER 2156/Naval Surface Fire Support

D. (U) Schedule Profile:



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
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			
Schedule Profile for NSFS Munition	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
ERM (Includes Prop Charge)								
Contract Mods	2Q	1Q						
Systems Development & Demonstration	1Q-4Q ←	→			4Q			
Land Based Flight & Qual Test Series			4Q	1Q-4Q				
Engineering Flight Tests	1Q							
GWS Development & Integration				1Q ←	→ 4Q			
Operational Evaluation (OPEVAL) Decision				4Q				
Operational Evaluation (OPEVAL)					4Q			
Technical Evaluation (TECHEVAL)					4Q			
FOT&E w/ EX 45 5"/62 MOD 4 & FCS MK 160 MOD 8 (60)					4Q			
LRIP Decision					4Q			
LRIP Deliveries						4Q		
MS C					4Q			
IOC						4Q		
Production & Deployment					4Q ←	→		4Q
FRP Award						4Q		
FRP #1 & #2 / Deliveries							1Q-4Q	1Q-4Q
Product Improvement Programs (PIP) & Pre-Planned Product Improvements (P^3I)						1Q-4Q ←	→	1Q-4Q
BTERM II[(1)]								
Demonstration Phase	1Q ←	→ 2Q						
Flight Tests	1Q ←	→ 2Q						

[(1)] BTERM effort in FY06 and 07 is funded via a FY06 Congressional Add

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: **2/1/2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROJECT NUMBER AND NAME 2325/Naval Fires Control System					
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**3.295**	**2.264**	**1.013**	**1.264**	**1.270**	**1.252**	**0.480**	**0.483**
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 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 NFCS to share the Advanced Tactical Display Console (ATDC) with ATWCS and TTWCS. 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.258	1.451	0.713	0.764
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.188	0.103	0.000	0.000
RDT&E Articles Quantity				

Funding supports hardware configuration to support NFCS implementation. Support DT validation.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.250	0.301	0.100	0.100
RDT&E Articles Quantity				

Funding provides Technical Direction Agent support, joint requirements investigation and Concept of Operations (CONOPs) scenario development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.299	0.200	0.100	0.100
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 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.300	0.200	0.100	0.100
RDT&E Articles Quantity				

Funding supports developmental test and evaluation, and logistics support elements development.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.200
RDT&E Articles Quantity				

Funding supports operational test and evaluation and logistics support elements development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
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	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI 5112	4.289	3.311	1.374	1.691	1.421	1.130	1.144	1.159	CONT	

D. 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.

E. 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.

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

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

PROGRAM ELEMENT: 0603795N/Land Attack Tech

PROJECT NUMBER AND NAME: 2325/Naval Fires Control System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Software Development	SS/CPAF	GDIS, Arlington, VA	27.517									0.000	27.517	
	SS/CPAF	LM/MDS, Valley Forge, PA	19.079									0.000	19.079	
	WR/WX	NSWC, Dahlgren, VA	10.638	2.017	10/05	1.172	10/06	0.383	10/07	0.428	10/08	CONT	CONT	
	VAR	VARIOUS	1.119									0.000	1.119	
	WR/WX	SSC/SD	4.469	0.340	10/05	0.295	10/06	0.200	10/07	0.200	10/08	CONT	CONT	
Systems Engineering	WR	SSC/SD	2.951									0.000	2.951	
	WR/WX	NSWC, Dahlgren, VA	18.048	0.200	10/05	0.100	10/06	0.100	10/07	0.100	10/08	CONT	CONT	
	SS/CP	VITRO/BAE	0.670									0.000	0.670	
	VAR	VARIOUS	1.304									0.000	1.304	
Ancillary Hardware Development	WR/WX	NUWC, Keyport Division	10.970	0.088	10/05	0.058	10/06					CONT	CONT	
	WR/WX	NSWC/PT HUE, CA	5.335	0.200	10/05	0.200	10/06					CONT	CONT	
	VAR	PMFATDS	3.576									0.000	3.576	
	SS/CPAF	JHU/APL	1.362									0.000	1.362	
	SS/CPFF	JHU/APL	0.121									0.000	0.121	
	WR	NSWC, Dahlgren, VA	2.236									0.000	2.236	
	VAR	VARIOUS	1.541									0.000	1.541	
LAM FC Hardware/Software Dev	SS/CPFF	LM/Baltimore, MD	4.181									0.000	4.181	
TERMINATED	SS/CPAF	LM/MDS, Valley Forge, PA	12.131									0.000	12.131	
	SS/CPFF	UDLP	0.455									0.000	0.455	
	WR	NSWC, Dahlgren, VA	1.162									0.000	1.162	
	WR	SSC/SD	0.486									0.000	0.486	
LAM FC Systems Engineering	SS/CPFF	JHU/APL	0.386									0.000	0.386	
TERMINATED	WR	NSWC/PT HUE, CA	0.361									0.000	0.361	
Award Fees			3.979									0.000	3.979	
Subtotal Product Development			134.077	2.845		1.825		0.683		0.728		CONT	CONT	

Remarks:

Development Support Equipment														
Software Development		NSWC, Panama City	0.049									0.000	0.049	
Training Development	VAR	VARIOUS	0.487									0.000	0.487	
Integrated Logistics Support	VAR	VARIOUS	5.115	0.090	Various	0.150	Various	0.100	Various	0.100	Various	CONT	CONT	
Configuration Management														
Technical Data														
GFE														
Subtotal Support			5.651	0.090		0.150		0.100		0.100		CONT	CONT	

Remarks:

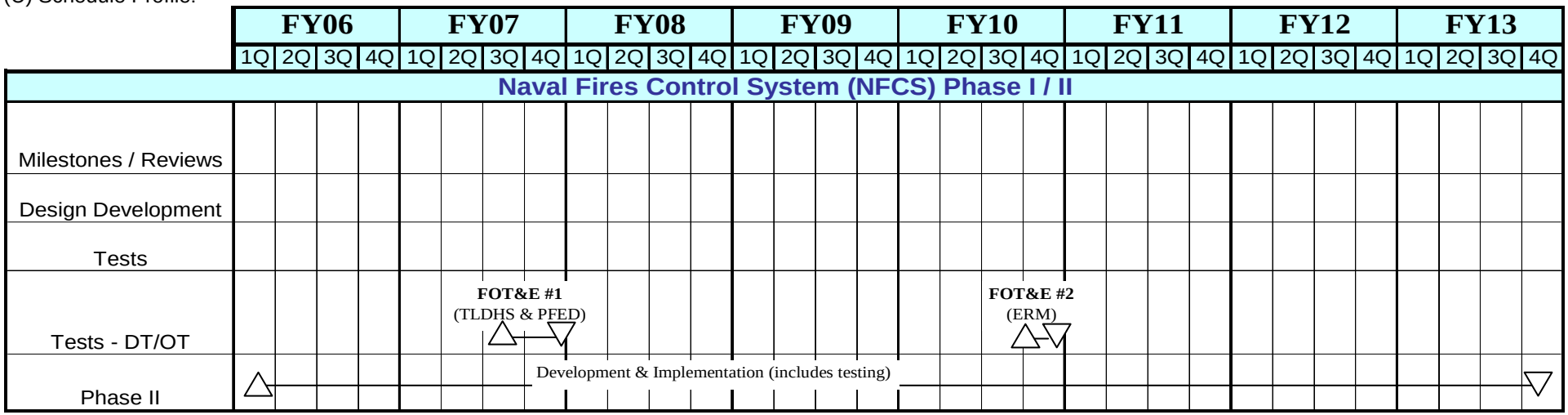
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)				DATE: February 2007										
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Techno		PROJECT NUMBER AND NAME 2325/Naval Fires Control System										
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC/PT HUE, CA	5.867	0.210	10/05	0.150	10/06	0.100	10/07	0.100	10/08	CONT	CONT	
	VAR	Various	1.500									0.000	1.500	
Operational Test & Evaluation	VAR	Various	5.508	0.000	10/05	0.000	10/06	01/00	N/A	0.200	10/08	CONT	CONT	
Live Fire Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			12.875	0.210		0.150		0.100		0.300				
Remarks:														
BTR			0.000											
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	VAR	VARIOUS	5.013	0.120	Various	0.100	Various	0.100	10/07	0.106	10/08	CONT	CONT	
Travel	PD	NAVSEA HQ	0.455	0.030	Various	0.030	Various	0.030	10/07	0.030	10/08	CONT	CONT	
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			5.468	0.150		0.130		0.130		0.136		CONT	CONT	
Remarks:														
Total Cost			158.071	3.295		2.255		1.013		1.264		CONT	CONT	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2007**
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

D. (U) Schedule Profile:



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 2325/Naval Fires Control System			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
NFCS								
Milestone III								
VCD								
IOC								
F0T&E #1 (TLDHS & PFED)		3Q - 4Q						
F0T&E #2 (ERM)					4Q			
Phase II Development & Implementation (includes testing)	1Q	<----------	----------	----------	----------	----------	---------->	4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	Project Unit No. 9999 Name: Congressional Adds : VARIOUS

CONGRESSIONAL ADDS:

	FY 06	FY 07		
9051C				
Advanced Medium Gun Demonstrator	2.308	1.096		

The Advanced Medium Caliber Gun System is a demonstration to investigate an advanced gun design encompassing modularity, scalability, compactness, and long range. The program is intended to provide a versatile gun test platform for the U.S. military to further explore advanced gun technology in the areas of materials (barrel coatings and liners), interior and exterior ballistics and advanced projectiles. Tasks to be completed include conduct of Limited Performance Elevated Test, fabricate and integrate horizontal propellant characterization test fixture and recoil mechanism and elevatable test stand.

	FY 06	FY 07		
9359C				
Affordable Weapon System	34.500	15.541		

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	FY 07		
9052C				
Ballistic Trajectory Extended Range Munition Program	9.810	11.955		

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 demonstration program will end in 2nd QTR of FY07. Additional in-scope tasks that need to be completed include obturator design and development to meet hot gun requirements, successful long range and short range guided flight tests including demonstration of electronic rocket motor ignition, warhead design and lethality assessment, and fuze development and demonstration. Four Guided Flight Test will be performed during FY07.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	Project Unit No. 9999Name: Congressional Adds: VARIOUS

CONGRESSIONAL ADDS:

	FY 06	FY 07		
9362C				
Millennium Gun System	3.942	1.992		

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. These funds provide for the initial review of the 35mm Millennium Gun and ammunition development process and planning for successful weapon suitability. It also supports the Weapon System Explosives Safety Review Board (WSESRB) review, testing and certification process as well as required logistics support analyses and planning.

	FY 06			
9542C				
Mk57mm gun/ammo transition and start up	8.058			

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 of the 57mm MK 110 Mod 0 Gun gun and associated ammunition and engineering analysis. Production transition includes a technical validation/verification and physical configuration audit of the 57mm gun, first article test of the gun barrel, and update of documentation.

	FY 06			
9829N				
76mm Medium Caliber Gun	0.972			

The 76mm Super Rapid gun supports the investigation of a medium caliber gun and associated ammunition. This effort includes support for the Weapon Systems Explosives Safety Review Board (WSESRB) reviews, test documentation and drawings, and test equipment required for gun and ammunition evaluation.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	Project Unit No. 9999Name: Congressional Adds: VARIOUS

CONGRESSIONAL ADDS:

		FY 07		
9829C				
76mm Super Rapid Medium Caliber Gun		1.793		

The 76mm Super Rapid gun supports the investigation of a medium caliber gun and associated ammunition. This effort includes support for the Weapon Systems Explosives Safety Review Board (WSESRB) reviews, test documentation and drawings, and test equipment required for gun and ammunition evaluation.

		FY 07		
9A22N				
Automated Explosive Safety Assessment Tools		0.996		

Responsible Program Office Unknown

9A23N		FY 07		
EX 171Extended Range Guided Munitions (ERGM) EMD		2.192		

Perform additional component level reliability tests in FY07. Perform flight test planning and test set-up activities in FY07 at White Sands Missile Range.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	Project Unit No. 9999Name: Congressional Adds: VARIOUS

CONGRESSIONAL ADDS:

		FY 07		
9A24N				
Projectile Common Guidance		2.192		

Develop and implement a plan to integrate a lower cost Guidance Electronics Unit (GEU) in ERGM. Build initial circuit card prototypes.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**42.591**	**49.129**	**45.892**	**46.625**	**47.619**	**48.586**	**49.322**	**50.346**
C2319 Non-Lethal Weapons	**41.633**	**44.646**	**45.892**	**46.625**	**47.619**	**48.586**	**49.322**	**50.346**
C9999 Congressional Adds	**0.958**	**4.483**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
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.

B. PROGRAM CHANGE SUMMARY

	FY2006	FY2007	FY2008	FY2009
(U) FY 2007 President's Budget:	**46.902**	**44.815**	**45.613**	**46.261**
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reductions	-0.013			
(U) Congressional Rescissions				
(U) Congressional Increases		4.500		
(U) Reprogrammings	-3.383			
(U) SBIR/STTR Transfer	-0.910			
(U) Minor Affordability Adjustment	-0.005	-0.186	0.279	0.364
(U) FY 2008 President's Budget:	**42.591**	**49.129**	**45.892**	**46.625**

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY2010	FY2011	FY2012	FY2013
Project Cost	**41.633**	**44.646**	**45.892**	**46.625**	**47.619**	**48.586**	**49.322**	**50.346**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.141**	**2.500**	**2.500**	**2.705**
RDT&E Articles Qty				

Execution oversight, administration and support of the Joint NLW Program and technologies database.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.600**	**0.775**	**1.112**	**1.200**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.307**	**1.438**	**1.730**	**1.730**
RDT&E Articles Qty				

Modeling and simulation (M&S) of NLWs in warfighter training/war gaming models and performance effects data collection/population to demonstrate/analyze NL effects and optimize training.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.200**	**1.075**	**1.075**	**1.075**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**2.301**	**2.300**	**1.051**	**0.000**
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.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.731**	**2.340**	**2.400**	**2.450**
RDT&E Articles Qty				

Program support for each service's coordination and participation in the Joint NLW Program.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.200**	**0.756**	**0.200**	**0.200**
RDT&E Articles Qty				

Mk19 NL Munition - Development of a NL munition for the 40mm Mk19 Grenade Machine Gun.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**4.500**	**5.000**	**0.000**	**0.000**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**5.000**	**6.000**
RDT&E Articles Qty				

Active Denial Transition - Jointly sponsored effort that will transition the Active Denial System capability from an ACTD to an acquisition program of record.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**2.600**	**0.000**	**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 programmatics of several new initiatives and the independent technical assessment of Joint Non-Lethal Weapons.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.918**	**0.211**	**0.000**	**0.000**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**4.862**	**5.687**	**6.120**	**6.120**
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.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**6.427**	**7.100**	**7.373**	**7.539**
RDT&E Articles Qty				

The advanced development of emerging technologies into the acquisition process to satisfy critical joint mission tasks.

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**7.178**	**7.961**	**8.000**	**8.000**
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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**1.458**	**1.458**	**1.458**	**1.458**
RDT&E Articles Qty				
Develop/expand the NATO Measures of Effectives (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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**3.240**	**3.240**	**4.225**	**4.500**
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				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.813**	**1.512**	**3.000**	**3.000**
RDT&E Articles Qty				
Mission Payload Module Non Lethal Weapon System (formerly TUGV) - Development of a tube launched NL munition for integration on HUMMWVs, tactical vehicles, boats and ships, with a range of 30-150 meters (T) and 10 - 500 meters (O).				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.509**	**0.645**	**0.000**	**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.				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.648**	**0.648**	**0.648**	**0.648**
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 $	**41.633**	**44.646**	**45.892**	**46.625**

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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) PROJECT CHANGE SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009
(U) FY 2007 President's Budget:	**45.902**	**44.815**	**45.613**	**46.261**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions	-0.003			
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	-3.383			
(U) SBIR/STTR Transfer	-0.882			
(U) Minor Affordability Adjustments	-0.001	-0.169	0.279	0.364
(U) FY 2008 OSD Budget:	**41.633**	**44.646**	**45.892**	**46.625**

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.
(U) Schedule: Not applicable
(U) Technical: Not applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
(U) PAN,MC BLI 162800, Non-Lethal Munitions	2.710	5.151	4.191	5.132	3.029	1.972	1.922	1.933	Cont	Cont
(U) PMC BLI 220800, Weapons Enhancement Prog	42.172	19.681	14.994	23.832	22.761	23.090	6.249	6.389	Cont	Cont

(U) Related RDT&E: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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) 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 are 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:

FY08-FY09 - The Air Force and Army will continue to transition the Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) to a joint acquisition program.

(U) SCHEDULE PROFILE: Not Applicable.

Exhibit R-3 Cost Analysis

DATE: **February 2007**

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**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
Product Development	MIPR	ARDEC, Picatinny, NJ	65.521	5.879	10/05	5.618	10/06	5.619	10/07	5.108	10/08	Cont	Cont	
Product Development	MIPR	SOCOM, McDill AFB, FL	5.000	0.540	12/05	0.000	12/06	0.000		0.000		Cont	Cont	
Product Development	WR	NSWC, Various	15.045	1.296	Various	1.265	Various	0.936	Various	0.876	Various	Cont	Cont	
Product Development	MIPR	Kirtland AFB, NM	41.048	4.745	12/05	5.000	12/06	5.000	12/07	5.491	12/08	Cont	Cont	
Product Development	MIPR	JWCF, Ft. Monroe, VA	2.859	0.645	02/06	0.775	02/07	1.112	02/08	1.309	02/09	Cont	Cont	
Product Development	MIPR	Brooks AFB, TX	16.403	5.218	02/06	6.210	02/07	6.120	02/08	6.220	02/09	Cont	Cont	
Product Development	WR/RCP	MCSC, Quantico,VA	26.801	3.966	11/05	1.782	11/06	1.976	11/07	2.100	11/08	Cont	Cont	
Product Development	MIPR	NSMA,Arlington, VA	12.002	3.240	01/06	3.240	01/07	3.902	01/08	4.000	01/09	Cont	Cont	
Product Development	CPFF	MCLB, Albany,GA	5.119	0.000	01/06	0.000	01/07	0.000	01/08	0.000	01/09	Cont	Cont	
Product Development	MIPR	Various - M&S	5.288	1.307	Various	1.438	Various	1.730	Various	1.851	Various	Cont	Cont	
Product Development	MIPR	Various - JIP	5.705	0.648	Various	0.648	Various	0.648	Various	0.648	Various	Cont	Cont	
Product Development	MIPR	Var (Uniformed Services)	29.617	10.419	Various	14.645	Various	14.700	Various	14.873	Various	Cont	Cont	
												Cont	Cont	
Subtotal Product Dev			**230.408**	**37.903**		**40.621**		**41.743**		**42.476**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
Support Cost	WR	MCSC, Quantico, VA	4.399	0.450	11/05	0.450	11/06	0.500	11/07	0.500	11/08	Cont	Cont	
Support Cost	WR	NSWC, Dahlgren, VA	3.113	0.440	02/00	0.440	10/06	0.470	10/07	0.470	10/08	Cont	Cont	
Support Cost	Various	MCSC, Quantico, VA	7.049	0.590	12/05	0.635	12/06	0.679	12/07	0.679	12/07	Cont	Cont	
Support Cost	Various	Various	8.316	2.250	-0.003	2.500	Various	2.500	Various	2.500	Various	Cont	Cont	
												Cont	Cont	
Subtotal Support			**22.877**	**3.730**	**2.600**	**4.025**		**4.149**		**4.149**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
T&E Cost												Cont	Cont	
												Cont	Cont	
Subtotal T&E			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Compl	Total Cost	Target Value of Contract
Management														
Subtotal Management			**0.000**	**0.000**		**0.000**		**0.000**		**0.000**		**Cont**	**Cont**	

Remarks:

Total Cost			**253.285**	**41.633**		**44.646**		**45.892**		**46.625**		**Cont**	**Cont**	

Exhibit R-4-4a Project Schedule/Detail		DATE: February 2007
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:

Mobility Denial System (MDS)

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		

Airburst Non-Lethal Munition (ANLM)

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		

Active Denial System (ADS) ACTD

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.

Program Funding Summary (APPN, BLI #, NOMEN)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
(U) RDT&E,N	41.633	44.646	45.892	46.625	47.619	48.586	49.322	50.346	Cont	Cont

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration and Validation**	PROGRAM ELEMENT NUMBER AND NAME **0603851M Non-Lethal Warfare Dem/Val**	PROJECT NUMBER AND NAME **C9999 FY06 Congressional Adds**

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 20010	FY2011	FY2012	FY2013
C9999 Congressional Adds	**0.958**	**4.483**	**0.000**	**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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.958**	**1.295**	**0.000**	**0.000**
RDT&E Articles Qty				

Boat Trap System for Port Security/Craft Interdiction 9878A: 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 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**2.192**	**0.000**	**0.000**
RDT&E Articles Qty				

Non-Lethal Defense Technology Research 9A26: This Congressional plus-up is intended to assist in the cross-comparison of technology, human effects and long term programmatics of several new initiatives and the independent technical assessment of Joint Non-Lethal Weapons.

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishment/Effort Subtotal Cost	**0.000**	**0.996**	**0.000**	**0.000**
RDT&E Articles Qty				

3-D Thru Wall Imaging 9A25: This Congressional plus-up will develop a "through-the-wall" imaging capability that will provide high-resolution 3-D visualization of objects, people, weapons, and other materiel utilizing extremely broadband microwave technology. Successful implementation of the system will allow the warfighter to recognize what is inside a building prior to entering; spot booby traps; and identify exit routes for the enemy.

(U) Total $	**0.958**	**4.483**	**0.000**	**0.000**

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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:	FY 2006	FY 2007	FY 2008	FY 2009
(U) FY 2007 President's Budget:	**1.000**	**0.000**	**0.000**	**0.000**
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions	-0.010			
(U) Congressional Rescissions				
(U) Congressional Increases		4.500		
(U) POM 06 Core Adjustment				
(U) Reprogrammings				
(U) SBIR/STTR Transfer	-0.028			
(U) Minor Affordability Adjustment	-0.004	-0.017		
(U) FY 2008 President's Budget:	**0.958**	**4.483**	**0.000**	**0.000**

CHANGE SUMMARY EXPLANATION:
(U) Funding: See above.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
(U) Related RDT&E:										
(U) RDT&E PE 0603851M, Project C2319, NL Warfare Dem/Val	41.633	44.646	45.892	46.625	47.619	48.586	49.322	50.346	Cont	Cont

(U) D. ACQUISITION STRATEGY:

(U) E. MAJOR PERFORMERS:

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4

R-1 ITEM NOMENCLATURE
0603857N - Joint Fires Integration and Interoperability Team (JFIIT)

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**15.085**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
2691 - Joint Fires Integration and Interoperability Team	**15.085**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Quantity of RDT&E Articles								

In accordance with the FY 2005 National Defense Authorization Act, RDT&E funding for Joint Forces Command transfers from Navy to Defense-Wide beginning in FY 2007. The program element is changed from 0603857N BA 4 to 0604857D BA 4.

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

Joint Fires Integration and Interoperability Team (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. Joint Forces Command (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.

On 24 February 2005, Joint Combat Identification Evaluation Team (JCIET) name changed to Joint Fires Integration and Interoperability Team (JFIIT).

(**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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
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) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 07 President's Budget	15.451	0.000	0.000	0.000
FY 08/09 President's Budget Submit	15.085	0.000	0.000	0.000
Total Adjustments	-0.366	0.000	0.000	0.000
Summary of Adjustments				
Miscellaneous Navy Adjustments	-0.366	0.000	0.000	0.000
Subtotal	-0.366	0.000	0.000	0.000

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 06	FY 07	FY08	FY 09
Accomplishments/Effort/Subtotal Cost	4.294			
RDT&E Articles Quantity				

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.

FY 2006 ACCOMPLISHMENTS: JFIIT conducted 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 require full instrumentation of all blue force and opposing force participants. All platforms including aircraft, ships at sea, and land based assets will have full instrumentation. 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.

JFIIT Support	FY 06	FY 07	FY08	FY 09
Accomplishments/Effort/Subtotal Cost	1.532			
RDT&E Articles Quantity				

FY 2006 ACCOMPLISHMENTS: Continued base support.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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

Annual Support Contracts	FY 06	FY 07	FY08	FY 09
Accomplishments/Effort/Subtotal Cost	8.847			
RDT&E Articles Quantity				

FY 2006 ACCOMPLISHMENTS: JFIIT continued 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.

Travel and Conferences	FY 06	FY 07	FY08	FY 09
Accomplishments/Effort/Subtotal Cost	0.412			
RDT&E Articles Quantity				

FY 2006 ACCOMPLISHMENT: JFIIT hosted and attended 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 provided Subject Matter Experts to various forums.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Not Applicable								

(U) E. ACQUISITION STRATEGY:

FY 2006. 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-sourc contract procedures, to include reviewing Government agencies, to determine the best vendor to meet JFIIT requirements, at the best value.

(U) F. MAJOR PERFORMERS:

NONE

(U) G. PERFORMANCE METRICS:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)									DATE: **February 2007**			
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 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 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
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
Remarks:												

Exhibit R-3, Cost Analysis

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

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 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Evaluation Other Costs	MIPR	Various	3.382							Continuing	Continuing	
Operations Costs/Research	MIPR	JFIIT/Various	1.532							Continuing	Continuing	
Developmental Test and Evaluation	MIPR	Various	0.538							Continuing	Continuing	
Travel and Conferences	MIPR	JFIIT/Various	0.423							Continuing	Continuing	
Operational Test and Evaluation	SS/T&M	SAIC, BAE, CNA / Eglin AFB	8.847							Continuing	Continuing	
Operational Test and Evaluation	CPAF	TAMS / Eglin AFB	0.363							Continuing	Continuing	
Subtotal T&E			15.085	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Subtotal Management			0.000	0.000		0.000		0.000				
Remarks:												
Total Cost			15.085	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												

Exhibit R-3, Cost Analysis

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile			DATE: **February 2007**
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	2006				2007				2008				2009				2010				2011				2012				2013			
	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																																
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																																
LRIPII																																
FRP																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603857N - Joint Fires Integration and Interoperability Team (JFIIT)				PROJECT NUMBER AND NAME 2691 - Joint Fires Integration and Interoperability Team (JFIIT)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
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)	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								

Exhibit R-4a, Schedule Profile

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603860N, JPALS		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	35.573	33.116	70.811	84.934	89.549	105.712	114.030	87.138
2329 JOINT PRECISION APPROACH	35.573	33.116	70.811	84.934	89.549	105.712	114.030	87.138

(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 Department of Defense (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, and shipboard. 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 1994 and the Chief of Staff of the Air Force on 8 August 1994. The PALC MNS was validated by the Joint Requirements Oversight Council (JROC) on 29 August 1995. Army Joint Service participation was included in the 28 May 1996 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 (OIPT) determined that the MNS should be converted to an Initial Capabilities Document (ICD). The JPALS ICD was approved by the JROC on 19 September 2005. The Capability Development Document (CDD) and Analysis of Alternatives (AoA) update are in process and approval is planned in February 2007.

The funds cited above will support completion of the JPALS Increment 1 (Sea Based) Technology Development phase by 2Q FY 2008, will support Milestone B preparation requirements, will fund System Development and Demonstration (SDD) contract source selection efforts, and will initiate Increment 1 SDD phase efforts beginning FY 2008. Funding supports development of Sea Based JPALS system,initial integration aboard CV and LH class ships, and initiation of CV Airwing integration efforts for JSF, F/A-18, E-2, C-2, and MH-60 aircraft.

Several JPALS Land and Ship based Engineering Development Model (EDM) test articles will be procured and delivered in FY 2010 through FY 2012 to support system development and demonstration. A total of nine ship system EDMs will be procured for SDD and will support testing at land and sea based installations. Two of the ship system EDMs will be installed on CVNs and two will be installed on LHAs to support integrated test at sea. A total of four RDT&E Low Rate Initial Production (LRIP) systems will be delivered in FY 2013 in support of operational testing. The four LRIP systems will support testing at sea and at CVW deployment shore stations.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603860N, JPALS

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:	38.670	41.242	37.653	50.867
Current BES:	35.573	33.116	70.811	84.934
Total Adjustments	-3.097	-8.126	33.158	34.067
Summary of Adjustments				
Congressional Reductions				
Congressional Rescissions				
Congressional Undistributed Reductions	-0.720	-0.126		
Congressional Reduction		-8.000		
Congressional Increases	0.021			
			33.158	34.067
Miscellaneous Adjustments	-2.398			
Subtotal	-3.097	-8.126	33.158	34.067

Schedule: Due to additional POM-08 funding, ship, lab, and a/c integration efforts will begin in FY 2008 (after SDD contract award), vice FY2010 as depicted in the President's Budget 2007. Due to technology maturity, delivery of the EDM Test Articles will occur from 4Q FY 2010 through 1Q FY 2012 and the first Test Readiness Review will occur 1Q FY 2011. The Request for Proposal (RFP) and source selection process will occur 3Q FY 2007 through 2Q FY 2008, prior to SDD award in 2Q FY 2008. The data collection points and contract closeout activity have beenadded to depict an accurate schedule.

Technical: Air Force POM(08) outcome deferred JPALS Land Based development to a future Increment (to be addressed in POM(10)). Accordingly, the initial JPALS SDD contract will focus on Sea Based Increment 1 development only. The effort to change the program's technical baseline and to modify acquisition documentation to focus on Sea Based development only, necessitated adjustment of Milestone B and SDD Contract Award to FY 08.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2329 JOINT PRECISION APPROACH	35.573	33.116	70.811	84.934	89.549	105.712	114.030	87.138
RDT&E Articles Qty					1	5	3	4

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 Department of Defense (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, and shipboard. 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 1994 and the Chief of Staff of the Air Force on 8 August 1994. The PALC MNS was validated by the Joint Requirements Oversight Council (JROC) on 29 August 1995. Army Joint Service participation was included in the 28 May 1996 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 (OIPT) determined that the MNS should be converted to an Initial Capabilities Document (ICD). The JPALS ICD was approved by the JROC on 19 September 2005. The Capability Development Document (CDD) and Analysis of Iternatives (AoA) update are in process and approval is planned in February 2007.

The funds cited above will support completion of the JPALS Increment 1 (Sea Based) Technology Development phase by 2Q FY 2008, will support Milestone B preparation requirements, will fund System Development and Demonstration (SDD) contract source selection efforts, and will initiate Increment 1 SDD phase efforts beginning FY 2008. Funding supports development of Sea Based JPALS system,initial integration aboard CV and LH class ships, and initiation of CV Airwing integration efforts for JSF, F/A-18, E-2, C-2, and MH-60 aircraft.

Several JPALS Land and Ship based Engineering Development Model (EDM) test articles will be procured and delivered in FY 2010 through FY 2012 to support system development and demonstration. A total of nine ship system EDMs will be procured for SDD and will support testing at land and sea based installations. Two of the ship system EDMs will be installed on CVNs and two will be installed on LHAs to support integrated test at sea. A total of four RDT&E Low Rate Initial Production (LRIP) systems will be delivered in FY 2013 in support of operational testing. The four LRIP systems will support testing at sea and at CVW deployment shore stations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
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:

Technology Development Phase	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	35.573	33.116	11.250	0.000
RDT&E Articles Qty				

Complete technology maturation and risk reduction tasks via use of Broad Area Announcements (BAA)contracts 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 60.134 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).

System Development and Demonstration Phase	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	0.000	0.000	59.561	84.934
RDT&E Articles Qty				

Award JPALS Sea based Increment 1 SDD contract in 2Q FY 2008. Commence preparations for Systems Functional Review (SFR) and Systems Requirements Review (SRR). Fund integration, studies for JPALS avionics capability retrofits to CVN 21 based aircraft (F/A-18E/F,E/A-18G, E-2C/D, C-2A, and MH-60R/S). Support modernization of Air Wing platform avionics enabling a GPS precision approach capability to JPALS equipped CVN 21.

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
P1 Line Item 57-Shipboard Air Traffic Control-OPN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.500	Continuing	Continuing

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603860N, JPALS	PROJECT NUMBER AND NAME 2329, JOINT PRECISION APPROACH

D. ACQUISITION STRATEGY: TD phase development is being conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic Systems Command (Global Air) and multiple industry partners. This effort will provide the concept of operations, performance specifications and technology readiness levels necessary to provide the foundation from which to launch the Increment 1 System Development and Demonstration (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 deliverable products to the joint team. 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 has been deferred to Increment 2 and will be developed by the Air Force to meet the requirements of all the services.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: February 2007

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

PROGRAM ELEMENT: 0603860N, JPALS

PROJECT NUMBER AND NAME: 2329, JOINT PRECISION APPROACH

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Aircraft Integration - F18 E/F	C-CPFF	BOEING SATELLITE SYSTEMS, INC, HERNDON, VA						1.692	Dec 2008	Continuing	Continuing	
Aircraft Integration - MH-60 R/S	C-CPFF	LOCKHEED MARTIN CORPORATION, MANASSAS, VA						1.880	Dec 2008	Continuing	Continuing	
Aircraft Integration - E2C/D, C-2A	C-CPFF	NORTHROP GRUMMAN SYS CORP, ANNAPOLIS, MD						5.545	Dec 2008	Continuing	Continuing	
Primary Hardware Development	WX	NAWCAD - St. Inigoes, MD	31.706								31.706	
Primary Hardware Development - Spec Dev	C-CPFF	ARINC ENGINEERING SERVICES, LLC, ANNAPOLIS, MD	50.896								50.896	50.896
Primary Hardware Development - Tech Matura	C-CPFF	HONEYWELL TECH SOLUTIONS INC., LEXINGTON PARK, MD	6.550								6.550	6.550
Primary Hardware Development - Tech Matura	C-CPFF	RAYTHEON, FULLERTON, CA		6.641	Feb 2007						6.641	6.641
Primary Hardware Development - Tech Matura	C-CPFF	HONEYWELL TECH SOLUTIONS INC., LEXINGTON PARK, MD		6.641	Feb 2007						6.641	6.641
Primary Hardware Development - SDD	C-CPAF	TBD				38.462	Feb 2008	48.076	Dec 2008	Continuing	Continuing	
Award Fees - SDD	C-CPAF	TBD				8.459	Jul 2008	6.449	Jul 2009	Continuing	Continuing	
Ship Integration	VAR	VARIOUS	4.110	.952	Dec 2006	.896	Dec 2007	.682	Dec 2008	Continuing	Continuing	
SUBTOTAL PRODUCT DEVELOPMENT			93.262	14.234		47.817		64.324		Continuing	Continuing	

Remarks: FY 2007 continues technology development phase. FY08 begins non-recurring engineering efforts under the SDD contract including requirements identification and decomposition. Conducts System Requirements Review, System Functional Review, PreliminaryDesign Review and Integrated Baseline Review under the SDD Contract. Begins airwing integration to support CVN-21 efforts.

SUPPORT												
Development Support	C-CPFF	ARINC ENGINEERING SERVICES, LLC, ANNAPOLIS, MD	4.126	1.554	Dec 2006	2.410	Dec 2007	1.921	Dec 2008	Continuing	Continuing	
Development Support	C-CPFF	THE TITAN CORPORATION, MARLTON, NJ	2.200	2.143	Dec 2006	2.018	Dec 2007	1.562	Dec 2008	Continuing	Continuing	
Development Support	VAR	VARIOUS	.200	1.023	Dec 2006	.962	Dec 2007	.757	Dec 2008	Continuing	Continuing	
Integrated Logistics Support	C-CPFF	VARIOUS	.786	.382	Jun 2007	.360	Dec 2007	.274	Dec 2008	Continuing	Continuing	
Integrated Logistics Support	WX	NAWCAD, Patuxent River, MD	.856	1.061	Dec 2006	1.298	Dec 2007	1.042	Dec 2008	Continuing	Continuing	
SUBTOTAL SUPPORT			8.168	6.163		7.048		5.556		Continuing	Continuing	

Remarks: Tasking supports completion of Technology Development phase activities. Support includes development of Milestone-B documentation, development of SDD RFP Documentation, completion of TD phase test and demonstration efforts and systems engineering support.

TEST & EVALUATION												
Developmental Test & Evaluation - NAWCAD	WX	NAWCAD, PATUXENT RIVER MD	2.100	3.114	Dec 2006	2.929	Dec 2007	2.327	Dec 2008	Continuing	Continuing	
Operational Test & Evaluation	WX	COMOPTEVFOR, NRFLK, VA	.100	.100	Dec 2006	.100	Dec 2007	.100	Dec 2008	Continuing	Continuing	
SUBTOTAL TEST & EVALUATION			2.200	3.214		3.029		2.427		Continuing	Continuing	

Remarks: Completion of TD phase demonstrations. DT focus on SDD phase test documentation planning and test range coordination. Develop DTtest cases. Monitoring of SDD contractor system integration build up. Operational test activities include test and evaluation master plan requirements flow into test cases.

MANAGEMENT												
Government Engineering Support - NAWCAD	WX	NAWCAD, PATUXENT RIVER MD	6.808	6.687	Dec 2006	9.978	Dec 2007	10.193	Dec 2008	Continuing	Continuing	
Program Management Support	C-CPFF	AMERICAN ELECTRONICS INC, CALIFORNIA, MD	.750	1.295	Nov 2006	1.220	Dec 2007	.964	Dec 2008	Continuing	Continuing	
Program Management Support-NAWCAD	WX	NAWCAD, PATUXENT RIVER MD	3.135	1.323	Dec 2006	1.246	Dec 2007	.987	Dec 2008	Continuing	Continuing	
Travel	TO	NAVAIRHQ	.200	.200	Dec 2006	.473	Dec 2007	.483	Dec 2008	Continuing	Continuing	
SUBTOTAL MANAGEMENT			10.893	9.505		12.917		12.627		Continuing	Continuing	

Remarks: Tasking includes execution of SDD contract activities, coordination of Prime Mission Product and support contractor activities, coordination with other USN aircraft and ship program offices, development of ship installation drawings, and non-recurring engineering support.

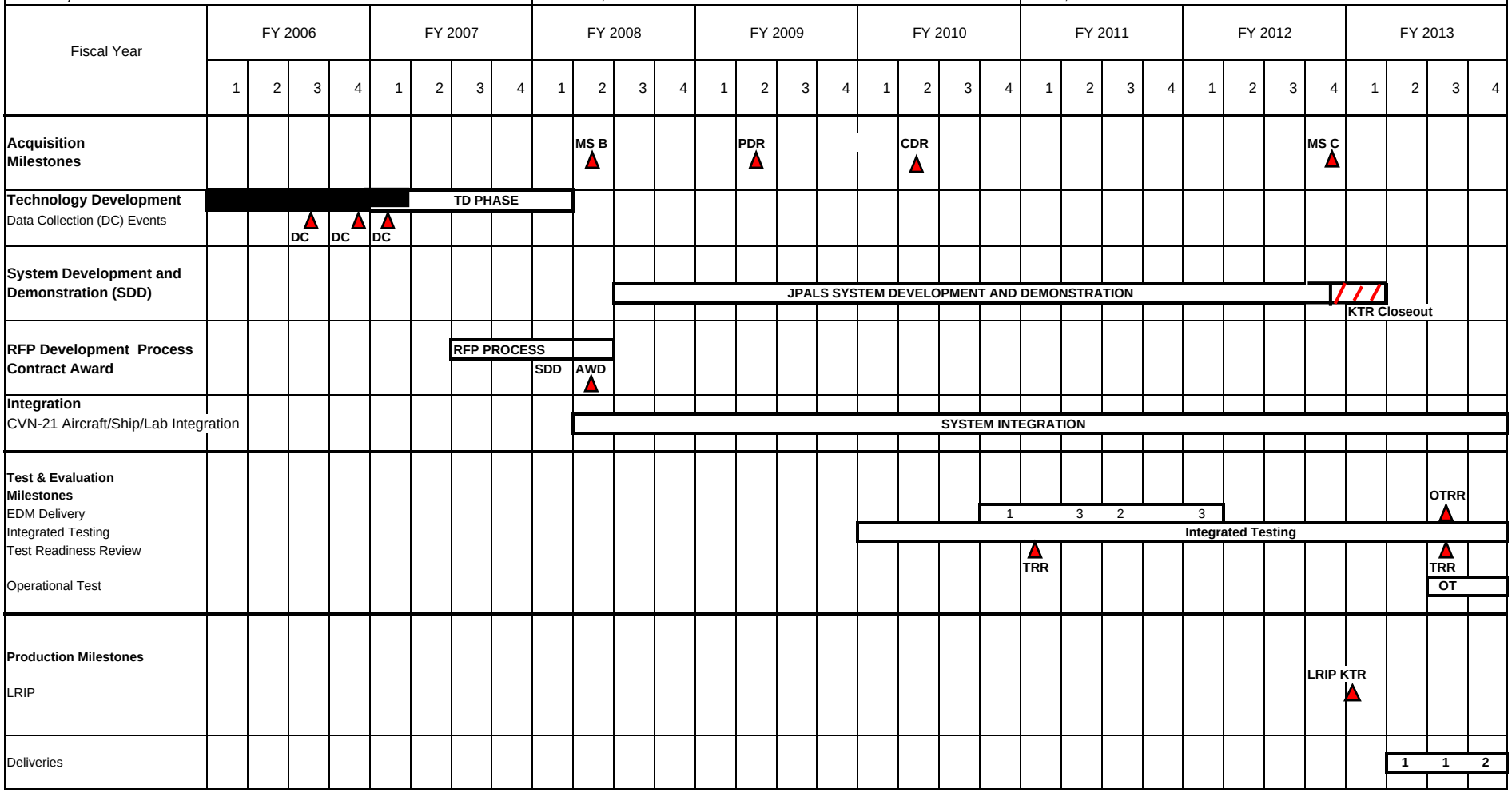
Total Cost			114.523	33.116		70.811		84.934		Continuing	Continuing	

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603860N, JPALS	E2329, JOINT PRECISION APPROACH



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT 0603860N, JPALS				PROJECT NUMBER AND NAME E2329, JOINT PRECISION APPROACH			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Technology Development	1Q-4Q	1Q-4Q	1Q					
Data Collection Points	3Q-4Q	1Q						
RFP Development Process		3Q-4Q	1Q-2Q					
Milestone B (MS B)			2Q					
SDD Contract Award			2Q					
System Development & Demonstration			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
SDD Contract closeout							4Q	1Q
Aircraft Integration			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Ship Integration			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Lab Integration			2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Preliminary Design Review (PDR)				2Q				
* Critical Design Review (CDR)					2Q			
Test Article Delivery (EDM)					4Q	1Q-4Q	1Q	
Integrated Testing					1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Test Readiness Review (TRR)						1Q		3Q
Milestone C (MS C)							4Q	
LRIP KTR Award								1Q
LRIP Deliveries								2Q-4Q
Operational Test Readiness Review								3Q
Operational Test								3Q-4Q
* CDR incorrectly shown in PB07. R-4 shows actual date.								

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: FEBRUARY 2007	
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**34.574**	**41.491**	**46.450**	**42.708**	**43.953**	**27.276**	**24.213**	**16.227**
Project 3031/Single Int. Air Picture (SIAP)	**34.574**	**39.847**	**46.450**	**42.708**	**43.953**	**27.276**	**24.213**	**16.227**
9999 - Congressional Add		**1.644**						

A. (U) 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, testing and fielding of a SIAP capability which satisfies requirements mandated by the Global Information Grid (GIG), Theater Air and Missile Defense (TAMD) and Combat Identification (CID) Mission Area Initial Capabilities Documents (MA-ICD). The Undersecretary of Defense Acquisition Memorandum of 3 May 06 validated the requirement for a SIAP capability and concurs with the Navy-designated Pathfinder programs identified for SIAP implementation. ASN(RDA) SIAP implementation guidance of 14 March 06 directs the Navy to implement the SIAP program product, integrated Architecture Behavior Model (IABM), in the following Navy pathfinder programs: Aegis Cruisers and Destroyers, Advanced Hawkeye Aircraft (E-2), and Ship Self Defense System (SSDS) platforms.

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 introducted through a series of improvements called Configurations (Capability Drops), targeted at eliminating specific interoperability issues, providing Command, Control, Communications, Computers, & Intelligence (C4I) enhancements, and delivering an executable integrated architecture. The engineering specifications and requirements developed by each configuration system engineering efforts 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 (OA) 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 OA 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.

This PE provides the resources for the Navy system engineering support to the Joint effort to develop SIAP capability, system engineering support to Navy Pathfinder Programs of Record (E-2, Aegis, SSDS) for integration of the Joint solution, and funding for the implementation in the Aegis combat system leveraging the Guided Missle Destroyer (DDG) Modernization program

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2007
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 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**34.574**	**41.491**	**46.450**	**42.708**	**43.953**	**27.276**	**24.213**	**16.227**
RDT&E Articles Qty	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

B. (U) Program Change Summary:

Funding:	FY 2006	FY 2007	FY2008	FY 2009
FY 07 President's Budget:	36.170	50.282	25.959	0.505
FY 08 President's Budget Submit:	34.574	41.491	46.450	42.708
Total Adjustments	-1.596	-8.791	20.491	42.203
Summary of Adjustments				
Congressional Adjustments		-8.632		
General recissions	-0.019	-0.159		
SBIR	-0.077			
BTR/Programmatic Changes	-1.500	0.000	20.491	42.203
Subtotal	-1.596	-8.791	20.491	42.203

Schedule: See Attached R4.

Technical: Program Scope increased to address change in SIAP development strategy IAW USD direction to include spiral development of the IABM
Program scope amended to include IABM integration for AEGIS class cruisers and destroyers.

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project 3031/Single Int. Air Picture (SIAP)**

A. (U) Mission Description and Budget Item Justification: (see page 1 of 10, R2 Budget Item Justification)
B. Accomplishments/Planned Program:

	FY06	FY07	FY08	FY09
SIAP Engineering Requirements	5.062	0.500	2.775	0.893
RDT&E Article Quantity	N/A	N/A	N/A	N/A

(U) FY2006 PLAN: Identified and defined Engineering Requirements for distributed SIAP system. Conducted Gap Analysis between SIAP System Requirements List and the superset of USN Requirements and finalized SIAP system requirements baseline. Completed functional and requirements allocation for host systems and IABM. Reviewed and provided comments concerning IABM system engineering artifacts. Started definition of Interface Description Document/Interface Description Specification (IDD/IDS) . Finalized Navy Enterprise Configuration Management and Change Control process.

(U) FY2007 PLAN: Continue System development. Refine System Requirements listing and verify requirements are satisfied in system design. Support System Engineering Review Process for SIAP Capability Drop 1 IABM development and DDG Modernization program including Preliminary Design Review (PDR)and Critical Design Review (CDR.)

(U) FY2008 PLAN: Continue System development and support System Engineering Review Process for Capability Drop 2 IABM and DDG Modernization program. Refine and finalize the SIAP systems requirements baseline for IABM Configuration '09 and support the Aegis Command and Decision (C&D) IABM technical product review. Finalize interface specifications in support of adatation and interface development for the IABM and host systems.

(U) FY2009 PLAN: Continue System development and support System Engineering Review Process for SIAP Capability Drop 2 IABM spirals, DDG Modernization program, and the E-2 program.

	FY06	FY07	FY08	FY09
Architecture Alignment	3.467	1.206	0.991	0.992
RDT&E Article Quantity	N/A	N/A	N/A	N/A

(U) FY2006 PLAN: Developed Navy host system architecture views, operational view (OV), system view (SV), (OV-1, OV-2, SV-1, SV-2, SV-4, SV-6, etc.) to support development of the Joint architecture for use in the IABM design. Included in the architecture alignment artifacts are system threat analysis, Joint Track Manager component and functional overviews, design missions and performance attributes for communications and data processing. Supported Architecture alignment of IABM design and planned Navy Pathfinder Programs of Record (E2, Aegis, SSDS) combat system modernization in order to facilitate integration and reduce future costs for upgrades. Provided Navy participation for the Joint Architecture Working Group as required.

(U) FY2007 PLAN: Finalize Joint architecture for the track manager, external communications, common services, and C2 interfaces and components. Continue to support architecture and functional alignment of Pathfinder Programs of Record (E2, Aegis, SSDS) modernization and IABM design. Develop or modify architecture artifacts required to support alignment and system integration of the IABM. Provide Navy participation for the Joint Architecture Working Group as required.

(U) FY2008 PLAN: Modify Joint architecture as required to address revised requirements baseline for SIAP Capability Drop 2 and functional alignment of Pathfinder Programs of Record (E2, Aegis, SSDS) and IABM design. Develop or modify architecture artifacts required to support alignment and system integration of the IABM. Provide Navy participation for the Joint Archtecture Working Group as required. Develop platform interface specifications for SIAP pathfinder programs.

(U) FY2009 PLAN: Complete architecture artifacts and monitor alignment as required for legacy and future systems. Provide Navy participation for the Joint Architecture Working Group as required.

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG	Project 3031/Single Int. Air Picture (SIAP)

B. Accomplishments/Planned Program (Cont)

	FY06	FY07	FY08	FY09
SIAP System Development	11.335	20.898	15.444	11.148
RDT&E Article Quantity	N/A	N/A	N/A	N/A

(U) FY2006 PLAN: Supported modeling and incorporation of track Initiation and measurement processing, track management, Peer-to-Peer (P2P) capability, Tactical Data Link (TDL) processing, network throughput management, sensor registration, and common services functionality in the SIAP IABM. Developed adaptation layers for the AN/SPS-48, AN/UPX-38, and CEC DDS for use with the IABM when implemented into the host systems. Developed a CEC Data Distributoin System (DDS) Data Manager for use in the CNI At-Sea demonstration. Partition Aegis C&D software in order to support implementation of the SIAP IABM.

(U) FY2007 PLAN: Support modeling and incoporation of composit tracking capability combat ID, data recording, CEC interoperability, TDL to TDL forwarding, P2P to TDL forwarding. Automated Battle Management Aids (ABMA), and system status and control functionality in the SIAP IABM. Develop adaptation layers for AN/SPY-1, AN/APS-145 and RT-1500. Develop host service interfaces for C2, communications terminals, navigation, time, and position inputs and corrections. Complete Aegis C&D software partitioning and migration to Open Architecture. Develop reference inplementations of the IABM to support land based lab demos for Aegis and E-2 and an At-Sea demonstration for the Common Network Interface (CNI) program. Define interface (IDD/IDS) specifications for IABM sensors, host Command and Control (C2), external communications, and common services (Navigation, Time, Data Extraction, etc.).

(U) FY2008 PLAN: Support modeling and incorporation of improved composite tracking capability, combat ID, track management, CEC Interoperability, TDL to TDL forwarding, P2P to TDL forwarding and system control functionality in the SIAP IABM for Capability Drop 2. Develop adaptation layers for AN/SPS-49, AN/SPQ-9, Electronic Search System, and AN/UPX-29. Complete host service interfaces. Begin development of the platform specific implementation of the IABM for the Aegis DDG Modernization and E-2 Hawkeye 2000 program.

(U) FY2009 PLAN: Support modeling and incorporation of improved functionality in the SIAP IABM for Capability Drop 2. Refine adaptation layers as required. Refine host service interfaces as required. Complete prototype platform specific implementation of the IABM for the Aegis DDG Modernization and E-2 Hawkeye 2000 program in order to support the conduct of a combined demonstration late this FY.

	FY06	FY07	FY08	FY09
SIAP Test Planning & Execution	7.737	6.637	9.215	8.431
RDT&E Article Quantity	N/A	N/A	N/A	N/A

(U) FY2006 PLAN: Test Plan and Execution (T&E) Planned and executed Engineering Assessments of the IABM focused on timebox deliveries which will be used for risk reduction activities and demos. Developed and maintained Engineering Assessment (EA) Test Criteria and Metrics. Developed Use Cases and Common Reference Scenarios for use to support the Navy test program. Produced and maintained EA test plans and reports. Conducted Alpha and Beta product testing and provided feedback and Test Observation Reports (TOR) to JSSEO. Developed the Navy portions of the SIAP Test and Evaluation Master Plan (TEMP). Acquired Kennedy-Carter Licenses for software required to produce test articles using the IABM. Developed automated test and re-test toolkit to speed the test result turn-around time. Supported the Joint Combined Hardware-in the Loop Event phase 4. Planned for assessments to be conducted during the FY07 land-based and at-sea demonstrations.

(U) FY2007 PLAN: Maintain SIAP TEMP and monitor execution. Plan and execute Engineering Assessments of the IABM focused on delivery of the IABM to support implementation of SIAP Capability Drop 1. Continue Alpha and Beta product testing and provide feedback and TOR to JSSEO. Plan IV&V event for the SIAP Capability Drop 1 IABM. Conduct assessments during the planned land-based and CNI At-Sea demonstration. Conduct analysis and prepare test reports for these events.

(U) FY2008 PLAN: Maintain SIAP TEMP and monitor execution. Plan and execute Engineering Assessments of the IABM under development to support SIAP Capability Drop 2 focused on timebox deliveries which will be used for risk reduction activities and demos. Continue Alpha and Beta product testing and provide feedback and TOR to JSSEO. Maintain test-bed equipment for use in Navy testing of the IABM product. Plan for assessments to be conducted during the combined Aegis and E-2 demonstration to be conducted in FY2009.

(U) FY2009 PLAN: Maintain SIAP TEMP and monitor execution. Plan and execute Engineering Assessments of the IABM focused on delivery of the IABM to support implementation of SIAP Capability Drop 2. Continue Alpha and Beta product testing and provide feedback and TOR to JSSEO. Maintain test-bed equipment for use in Navy testing of the IABM product. Plan IV&V event for the SIAP Capability Drop 2 IABM. Plan and conduct assessment during the planned combined Aegis and E-2 demonstration Conduct analysis and prepare test report of this events.

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project 3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program (Cont)

	FY06	FY07	FY08	FY09
SIAP Integration Coordination and Planning	3.439	0.600	2.379	1.784
RDT&E Article Quantity	N/A	N/A	N/A	N/A

(U) FY2006 PLAN: Revised and updated the Navy IABM Implementation Plan for the Navy Pathfinder Programs of Record (E-2, Aegis, SSDS). Supported preparation of the SIAP program Cost Analysis Requirements Description (CARD). Prepared the Navy portions of the SIAP Acquisition Strategy. Developed the Navy portions of the SIAP System Engineering Plan. Supported development of the IABM Acquisition Program Baseline (APB). Supported development of the SIAP Capability Development Document (CDD). Planned for and made preparations for Milestone B Defense Acquisition Board (DAB) to be conducted in FY07.

(U) FY2007 PLAN: Monitor and support execution of the Navy IABM Integration Plan. Prepare for and support conduct of the Milestone B DAB. Maintain Navy IABM Implementation Plan and SIAP Acquisition Strategy to support other Navy future and legacy platforms. Conduct planning for Risk Mitigation and configuration management activities.

(U) FY2008 PLAN: Monitor and support execution of the Navy IABM Integration Plan. Maintain Navy IABM Implementation Plan and SIAP Acquisition Strategy to support other Navy future and legacy platforms. Conduct planning for Risk Mitigation and configuration management activities.

(U) FY2009 PLAN: Monitor and support execution of the Navy IABM Integration Plan. Maintain Navy IABM Implementation Plan and SIAP Acquisition Strategy to support other Navy future and legacy platforms. Conduct planning for Risk Mitigation and configuration management activities.

	FY06	FY07	FY08	FY09
DDG Mod Platform Specific Model	3.534	10.000	15.646	19.460
RDT&E Article Quantity	N/A	N/A	N/A	N/A

U) FY2006 PLAN: Began the initial systems engineering effort to integrate the IABM into Aegis modernization ships. Specific tasks included IDD analysis, examining element data requirements, defining adaptation layers and defining software (s/w) architecture.

(U) FY2007 PLAN: Develop requirements and system definition documents in support of planned FY08 development of the Platform Specific Model (PSM) for integration of SIAP capability into Aegis C&D s/w. Specific tasks include identifying modifications required for existing s/w.

(U) FY2008 PLAN: Fund development of PSM for integration from delivered IABM and begin effort to integrate the SIAP Capability into Aegis C&D software planned for fielding in FY11 on Aegis Class Destroyers. Plan to partition existing software and modify existing applications associated with Capability Drop 1.

(U) FY2009 PLAN: Continue integration efforts and conduct demo using prototype implementation of the IABM to verify that the PSM satisfies Navy and Joint SIAP Capability Drop 1 requirements. Integrate IABM Capability 1 into the Aegis Modernization Commercial Off-the Shelf Refresh Event Three (CR3) code base. Also begin modification of existing applications for IABM Capability Drop 2.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project 3031/Single Int. Air Picture (SIAP)**	

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Related RDT&E: Computer programs developed under these programs are tested in their integrated configuration.

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)

D. Acquisition Strategy: Not Applicable

E. MAJOR PERFORMERS:

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
Lockheed Martin Corporation, Moorestown NJ
John Hopkins University Applied Physics Laboratory, Laurel MD

Exhibit R-3 Cost Analysis (page 1) DATE: FEBRUARY 2007

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 06 Cost**	FY 06 Award Date	**FY 07 Cost**	FY 07 Award Date	**FY 08 Cost**	FY 08 Award Date	**FY 09 Cost**	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 0 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	0.879									0.000	0.879	
	MIPR	Navy PEO/TSC, Arlington VA	1.129									0.000	1.129	
	MIPR	Air Force ESC, Boston MA	1.329									0.000	1.329	
	MIPR	Marine MARCOR, Quantico VA	0.621									0.000	0.621	
	VAR	Contract Supt, Various	5.155									0.000	5.155	
Subtotal Block 0			9.112										9.112	
Block 1 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	15.340									0.000	15.340	
	MIPR	Navy PEO/TSC, Arlington VA	16.085									0.000	16.085	
	MIPR	AF ESC/DI, Boston MA	17.114									0.000	17.114	
	MIPR	Marine MARCOR, Quantico VA	7.045									0.000	7.045	
	VAR	Contract Supt, Various	20.699									0.000	20.699	
Subtotal Block 1			76.282									0.000	76.282	
Block 2 (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	2.060									0.000	2.060	
	MIPR	Navy PEO/TSC, Arlington VA	2.266									0.000	2.266	
	MIPR	AF ESC/DI, Boston MA	2.369									0.000	2.369	
	MIPR	Marine MARCOR, Quantico VA	1.030									0.000	1.030	
	VAR	Contract Supt, Various	2.271									0.000	2.271	
Subtotal Block 2			9.996										9.996	
Architecture (JSSEO)	MIPR	Army PEO/AMD, Huntsville AL	1.536									0.000	1.536	
	MIPR	Navy PEO/TSC, Arlington VA	1.625									0.000	1.625	
	MIPR	AF ESC/DI, Boston MA	1.684									0.000	1.684	
	MIPR	Marine MARCOR, Quantico VA	0.786									0.000	0.786	
	VAR	Contract Supt, Various	2.364									0.000	2.364	
Subtotal Architecture			7.995										7.995	
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0.988									0.000	0.988	
Tools & Analysis	MIPR	Navy PEO/TSC, Arlington VA	0.876									0.000	0.876	
(JSSEO)	MIPR	AF ESC/DI, Boston MA	1.206									0.000	1.206	
	MIPR	Marine MARCOR, Quantico VA	0.520									0.000	0.520	
	VAR	Contract Supt, Various	1.191									0.000	1.191	
Subtotal SE Tools & Analysis			4.781									0.000	4.781	
Validation and Certificatior	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren VA	7.000										7.000	
BLOCK 0 (NAVY)														
	VAR	NAVSEA, Washington DC	1.174									0.000	1.174	
	VAR	PEO IWS, Washington, DC	5.876									0.000	5.876	
	WX/VAR	NAVAIR, Pax River, MD	4.757									0.000	4.757	
	PD/FAD	SPAWAR, San Diego, CA	3.428									0.000	3.428	
	PD	CHENG, Washington, DC	0.500									0.000	0.500	
Subtotal BLOCK 0			15.735									0.000	15.735	
BLOCK 1 (NAVY)														
	VAR	NAVSEA, Washington DC	3.450									0.000	3.450	
	VAR	PEO IWS, Washington, DC	7.082									0.000	7.082	
	WX/VAR	NAVAIR, Pax River, MD	4.493									0.000	4.493	
	PD/FAD	SPAWAR, San Diego, CA	3.192									0.000	3.192	
	PD	CHENG, Washington, DC	0.000									0.000	0.000	
Subtotal BLOCK 1			18.217									0.000	18.217	
SUBTOTAL			149.118	0.000		0.000		0.000		0.000		0.000	149.118	

Remarks: Remarks: In FY2004 and prior, PE 0603879N resourced the Joint SIAP effort. In FY2005 - 2006, the PE funded development of minimal SIAP upgrades for legacy combat systems (Block 0/Block 1) with 2005 being the last year of funding.

Exhibit R-3 Cost Analysis (page 1) DATE: FEBRUARY 2007

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 Engineering Requirements	Contract Method & Type	Performing Activity & Location	Total *PY s Cost	**FY 06 Cost**	FY 06 Award Date	**FY 07 Cost**	FY 07 Award Date	**FY 08 Cost**	FY 08 Award Date	**FY 09 Cost**	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
					VAR		VAR		VAR		VAR			
	VAR	NAVSEA, Washington DC		1.500				0.823		0.265		CONT	CONT	
	VAR	PEO IWS, Washington DC		1.556		0.100		0.853		0.274		CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD		1.398		0.200		0.766		0.247		CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA		0.607		0.200		0.333		0.107		CONT	CONT	
Subtotal Eng Requirements				5.062		0.500		2.775		0.893				
Architecture Alignment					VAR		VAR		VAR		VAR			
	VAR	NAVSEA, Washington DC		0.402				0.115		0.115		CONT	CONT	
	VAR	PEO IWS, Washington DC		1.608		0.400		0.460		0.460		CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD		0.607		0.305		0.173		0.174		CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA		0.849		0.300		0.243		0.243		CONT	CONT	
						0.201								
Subtotal Arch Alignment				3.467		1.206		0.991		0.992				
System Development					VAR		VAR		VAR		VAR			
	VAR	NAVSEA, Washington DC		6.243		13.571		8.563		6.334		CONT	CONT	
	VAR	PEO IWS, Washington DC		2.472		4.846		3.340		2.337		CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD		2.096		1.530		2.832		1.982		CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA		0.524		0.951		0.709		0.496		CONT	CONT	
Subtotal System Development				11.335		20.898		15.444		11.148				
Test & Execution					VAR		VAR		VAR		VAR			
	VAR	NAVSEA, Washington DC		2.070		1.369		2.465		2.256		CONT	CONT	
	VAR	PEO IWS, Washington DC		2.614		1.976		3.113		2.848		CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD		1.938		2.746		2.309		2.113		CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA		1.115		0.546		1.328		1.215		CONT	CONT	
Subtotal Test & Execution				7.737		6.637		9.215		8.431				
Integration Planning					VAR		VAR		VAR		VAR			
	VAR	NAVSEA, Washington DC		1.095				0.757		0.568		CONT	CONT	
	VAR	PEO IWS, Washington DC		0.704		0.200		0.487		0.366		CONT	CONT	
	WX/VAR	NAVAIR, Pax River, MD		0.814		0.250		0.563		0.422		CONT	CONT	
	PD/FAD	SPAWAR, San Diego, CA		0.826		0.150		0.572		0.428		CONT	CONT	
Subtotal Integration Planning				3.439		0.600		2.379		1.784				
DDG MOD PSM														
	FAD	LOCKHEED MARTIN		3.534	VAR	10.000	11/06	15.646	11/07	19.460	11/08	CONT	CONT	
SUBTOTAL - SIAP			0.000	34.574		39.841		46.450		42.708		CONT	CONT	
OA AUTOMATED TEST AND RETEST														
	VAR	Various Industry, SBIR Phase III			VAR	1.650						CONT	CONT	
TOTAL			149.118	34.574		41.491		46.450		42.708		CONT	CONT	

Remarks: In FY2004 and prior, PE 0603879N resourced the Joint SIAP effort. In FY2005 - 2006, the PE funded development of minimal SIAP upgrades for legacy combat systems (Block 0/Block 1) with 2005 being the last year of funding.

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **FEBRUARY 2007**
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)

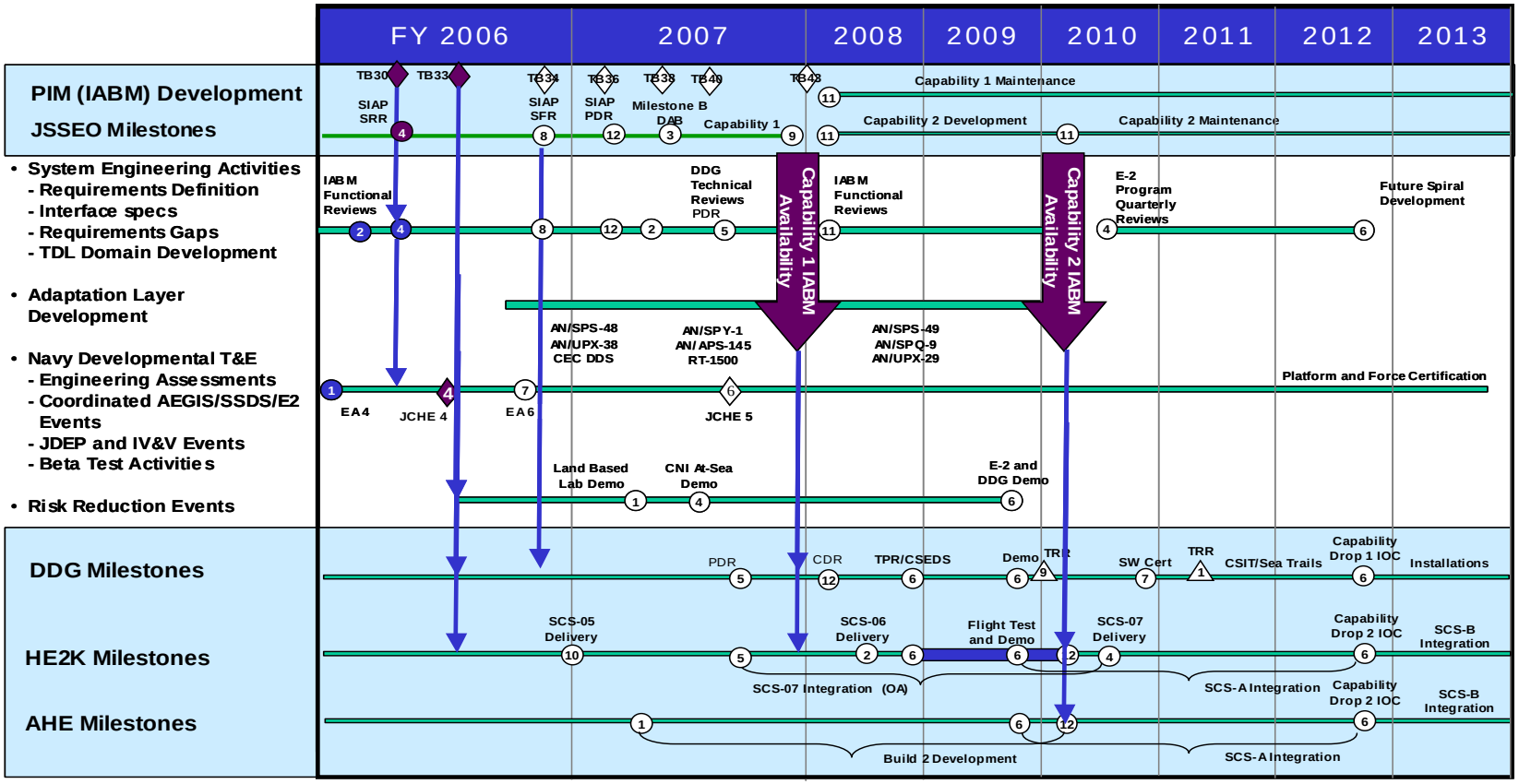


Exhibit R-4, RDTEN Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: FEBRUARY 2007			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603879N SINGLE INT. AIR PICTURE (SIAP) SYS ENG				PROJECT NUMBER AND NAME Project 3031/Single Int. Air Picture (SIAP)			
Schedule Profile	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Sustaining Engineering/Infrastructure (Navy)								4Q
IABM SFR	4Q							
IABM Reference Implementation At-Sea Demo	4Q	2Q						
Land Based Lab Demos	4Q	1Q						
IABM PDR		1Q						
Start Config'2009 (Capability Drop 2) System Engineering		1Q						
Milestone B DAB		2Q						
IABM Configuration 07 (Capability Drop 1) delivered		4Q						
IABM (PIM) Adaptation Layers completed/delivered			4Q					
E-2 and Aegis Capability Drop 1 PSM delivered				1Q				
DDG / E-2 IABM Implementation Demo				3Q				
IABM Configuration 09 (Capability Drop 2) delivered					1Q			
Capability Drop 1 PSM Integration Testing completed					2Q			
E-2 Capability Drop 2 PSM delivered						2Q		
Aegis (DDG) Installation Availiability begins						3Q		
Combat System Certification (Capability Drop 1)						4Q		
Aegis Ship Certification (Capability Drop 1)							1Q	
E-2 Baseline Certification (Capability Drop 2)							2Q	
Navy Joint (Air and Surface) SIAP Capability IOC							3Q	
Force Certification of Capability								2Q
Future Spiral Development								4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
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 Unit (PU) No. and Name: Congressional Plus-Ups : 9A27N

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
Proj. 9A27N				
Open Architecture Automated Test and Retest	1.644	0	0	0

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION , NAVY/ BA-4**				R-1 ITEM NOMENCLATURE 0603889N/Counterdrug RDT&E Projects				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**32.360**	**2.192**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
2219/Counterdrug RDT&E Projects	**25.446**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
9999N/Congressional Adds	**6.914**	**2.192**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Counterdrug RDTE Projects Program mission is to develop and deploy technology that disrupts, deters, and denies the flow of drugs, people, information, money and weapons related to narcoterrorism.

The Research of Frequency Selective Surfaces and Thermal Signatures project is a Congressional plus up. Micro antenna-array technology will be developed to enhance, camouflage, or conceal the infrared (IR) signatures of controlled assets. The overall project objective is to investigate the utility of frequency selective surfaces (FSS) and thin-film materials as tags that can be viewed using airborne or national sensors. Arrays of infrared micro antennas will be applied to the exterior surface of a controlled item to alter the object's emission in the portion of the IR band commonly used by thermal imagers. The micro antenna array will be tailored to control the emitted infrared spectral pattern in order to disguise, conceal, or tag the asset of interest. The tag could also be remotely monitored using available thermal imaging technology. Key features include the ability to discriminate friend-from-foe and the tailoring of the thermal profile to enhance long-distance stand-off monitoring.

The Volume Point Sensors project is a Congressional plus up. It is to demonstrate, based on recent research, that the existing or legacy electrical power lines can be used to charge and maintain all plug-in Chemical Biological Nuclear (CBN) point sensors as well as send sensor data and communications to in-line hubs, with out multiplexing coding and switching infrastructure cost. This system will provide the Ability to detect counter drug ops and x-mit info over power lines and power grids.

R-1 SHOPPING LIST - Item No. 76

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION , NAVY/ BA-4**	R-1 ITEM NOMENCLATURE 0603889N/Counterdrug RDT&E Projects

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007
FY 2007 President's Budget	8.150	0
FY 2008 President's Budget	32.360	0
Total adjustments:	24.210	0

Summary of Adjustments:		
Reprogramming	25.658	
Congressional program adjustments	-.71	
Congressional increases		2.192
SBIR assessment	-.347	
Undist. general reductions	-.30	
Program adjustments	-1.00	
Subtotal:	24.210	2.192

R-1 SHOPPING LIST - Item No. 76

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603889N/Counterdrug RDT&E Projects	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07		
9830N				
Athena Beta Site	3.697	2.192		

The Athena All-Domain Awareness Fusion Center (ADAFC) test bed provides a “system of systems” approach for the integration, processing, fusion and situational display of world-wide sensor and data systems information. Athena’s open architecture permits the rapid integration of sensors and data, and structured as a Command, Control Intelligence, Surveillance, and Reconnaissance (C2ISR) node, allows it to collect, process, exploit and disseminate information across a wide array of information systems. Athena’s spiral development process will continue to enhance its capabilities and will involve operational deployments in support of the counter narco-terrorism mission.

	FY 06			
9831N Force Protection and Installation				
Management System	0.960			

FPIMS will develop and establish an integrated and rapidly deployable wireless network system that will enable real-time situational awareness and information sharing among AT/FP and Installation Management personnel on Military Installations. FPIMS will leverage Air Guard secure wireless technology that allows networks and systems to “auto form” in seconds across a wide area and thus enable disparate functional domains to share information while managing AT/FP and other emergency operations. FPIMS will combat terrorism at military Installations by improving Physical Security and enhancing Detection Systems. Further, military assets such as Ships and other tactical vehicles will be able to rapidly connect and integrate into the AT/FP environment upon arriving on scene to improve emergency response.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603889N/Counterdrug RDT&E Projects	9999 Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

9543C/Research of frequency selective surfaces and	FY 06			
Thermal Signatures Project	2.257			

The Research of Frequency Selective Surfaces and Thermal Signatures project is a Congressional plus up. Microantenna-array technology will be developed to enhance, camouflage, or conceal the infrared (IR) signatures of controlled assets. The overall project objective is to investigate the utility of frequency selective surfaces (FSS) and thin-film materials as tags that can be viewed using airborne or national sensors. Arrays of infrared microantennas will be applied to the exterior surface of a controlled item to alter the object's emission in the portion of the IR band commonly used by thermal imagers. The microantenna array will be tailored to control the emitted infrared spectral pattern in order to disguise, conceal, or tag the asset of interest. The tag could also be remotely monitored using available thermal imaging technology. Key features include the ability to discriminate friend-from-foe and the tailoring of the thermal profile to enhance long-distance stand-off monitoring.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE Directed Energy and Electric Weapon Systems/0603925N			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**17.893**	**27.197**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
9999 - Congressional Adds	**17.893**	**27.197**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

COMNAVSEASYSCOM (PMS 405) was assigned as the single Point of Contact for matters related to Directed Energy and Electric Weapons development and acquisition initiation for the Navy and for those matters being coordinated with other Federal agencies and military services. The Naval Directed Energy and Electric Weapon Systems Program Office's (PMS 405) mission is to change the way the Navy fights in the 21st century by transitioning Directed Energy and Electric weapon technology, providing the war fighter with additional tools to fight today's and tomorrow's wars. In order to meet requirements, the Navy must effectively manage the transition of 6.3 advanced technology development initiatives through early 6.4 development, demonstration, and validation. PMS 405 manages development of Directed Energy and Electric Weapon Systems onboard future naval surface ships that incorporate: Weapons Grade High Energy Lasers, Free Electron Lasers (Megawatt class), Electromagnetic Rail Gun (EMRG), High Power Microwave Weapons and Sensor Systems, and other systems.

This program element is comprised of Congressional adds. FY2006 includes funding for Transportable Laser Induced Plasma Channel (LIPC), Lasers for Navy Applications, Optical Line Replaceable Units, and Electromagnetic Launcher (Rail Gun). In FY07, the program element is comprised of funding for Lasers for Navy Applications; Optical Line Replaceable Units (OLRUs); Deployable Ultra-Short Pulse Laser Development; Prototype Instrumentation System for Muscatatuck Urban Training Center (MUTC); and Directed Energy Research.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon Systems	9999 - Congressional Plus Ups - Various

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget: (FY07 Pres Controls)	0.000	0.000	0.000	0.000
Current President's Budget (FY08 Pres Controls):	17.893	27.197	0.000	0.000
Total Adjustments	17.893	27.197	0.000	0.000
Summary of Adjustments				
Congressional Increases	17.893	27.197	0.000	0.000
Subtotal	17.893	27.197	0.000	0.000

Schedule:

Not Applicable.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon Systems	9999 - Congressional Plus Ups - Various

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
0602114N - ONR *										
Maritime Directed Energy Test Center										
0602114N - ONR **										
Spectral Beam Combining Fiber Lasers										
0603235N - ONR										
Maritime Domain Identification System										
0601108F - JTO ***										
0602890F - JTO ***										
0601108F - JTO										
0602114N - ONR ***										
0603114N - ONR										

Notes: * FY05 Congressional Plus Up for Maritime Directed Energy Test Center was under the cognizance of NAVSEA PMS 405 (PE 0603582N PU S0164) BA-4

** FY05 Congressional plus-up for Spectral Beam Combining Fiber Lasers was under the cognizance of NAVSEA PMS 405 (PE 0205601N PU S9626) BA-4 - Phase III SBIR awarded under a FY05 plus-up

D. ACQUISITION STRATEGY:

Not Applicable (R&D effort only)

E. MAJOR PERFORMERS:

Government Field Activities: NRL; NSWC CD; NSWC Crane; NSWC DD.

Academia: Argonne Laboratory; Brooks Institute; Los Alamos National Laboratory; MIT; Penn State University; Thomas Jefferson Laboratory.

Contractors: Acculight; AES; Ionatron; Raytheon; Analytical Research; Schafer; Envisioneering; SPA; Textron; General Atomics; Northrop Grumman; Boeing; Titan; SYS; EWA; Radiance.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **FEBRUARY 2007**

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

PROGRAM ELEMENT: 0603925N Directed Energy and Electric Weapon Systems

PROJECT NUMBER AND NAME: 9999 - Congressional Plus Ups - Various

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Transportable Laser Induced Plasma	Various	Various		10.758	03/07								10.758	
Lasers for Navy Applications	Various	Various		3.266	06/06	3.188	06/07						6.454	
Optical Line Replaceable Units	Various	Various		0.961	06/06	0.996	06/07						1.957	
Electromagnetic Launcher Rail Gun	Various	Various		2.908	06/06	0.000		0.000		0.000			2.908	
Deployable Ultra-Short Pulse Laser	Various	Various				2.491	06/07	0.000		0.000			2.491	
Prototype Instr Sys for MUTC	Various	Various				1.096	06/07	0.000		0.000			1.096	
Directed Energy Research	Various	Various				19.426	06/07	0.000		0.000			19.426	
Total			0.000	17.893		27.197		0.000		0.000			45.090	

Remarks:
Mutiple funding documents and contract vehicles were utilized to obtain the services of the government field activities, academia, and contractors listed on the R-2a Page(s) 7-10.
Costs shown reflect all expenses (management, engineering, travel, etc.).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program

Transportable LIPC 9357	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	10.758	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

These funds were provided by Congressional Plus Up for the continued development of directed energy weapon system technology to counter terrorist attacks that employ asymmetric methods such as vehicle bombs, small boat attacks, suicide bombers, etc. Efforts include engineering and demonstration of miniature lasers to determine the maximum extended range and resultant effects associated with this laser guided energy, and includes the development and delivery of a mobile, demonstration prototype. The Transportable Laser Induced Plasma Channel (LIPC) will be used for development of guided Radio Frequency (RF) energy. LIPC is a Force Protection issue. The direct discharge of electrical energy guided by LIPC has the potential to provide a revolutionary weapon capability that can be employed to, among other applications, disable electronics and vehicles, and disrupt or destroy critical communication infrastructures. The LIPC enhanced directionality of energy may allow an improved efficiency of the transmission of the directed energy to a target, thereby offering reduced source size and power and/or an extended effectiveness range.

Initial system engineering and demonstration/testing of miniature lasers at limited ranges was accomplished with FY 04 funding. FY 05 funding was utilized for system design and engineering efforts to demonstrate LIPC at longer ranges that allows the Navy to show the military usefulness of this technology in various environments for Anti Terrorism / Force Protection (AT/FP). Funding will be used for continued development and demonstration of LIPC at tactically significant ranges, and for development of a mobile, demonstration prototype.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various	

B. Accomplishments/Planned Program

Lasers for Navy Applications 9531/9823	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	3.266	3.188	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

This funding supports the accomplishment of the requisite engineering, assessment, test, and demonstration of a near term High Energy Laser (HEL) Weapon Systems (HELWS) capability against littoral and asymmetric threats. Joint Vision 2020 requires the assessment and demonstration of the complementary nature of HELWS, coupled with defensive missiles/guns for ship self-defense. Mission survivability is required of our surface ships. High Energy Lasers offer the potential for complementing ship self-defensive weapon systems at tactically significant ranges. Critical to demonstrating this capability are accomplishment of the system engineering and analyses associated with laser development and analysis of engagement effects. This effort is vital to the Navy's plan to develop and field a naval laser to meet future Navy requirements.

FY06 funds were provided by Congressional Plus Up for Laser Lethality and Vulnerability research, testing, and analysis. A ship's mission survivability is greatly improved by increasing, and extending in range, the Probability of Kill (Pk) of the Rolling Airframe Missile (RAM). This can be accomplished by using a High Energy Laser Weapon System (HELWS) to irreversibly damage and disable a threat missile's sensor systems (by charring or damaging the radome) causing the threat missile to simplify its maneuvering attack flight profile. Critical to demonstrating this concept are experiments and analyses associated with laser charring of composite radomes and the resultant decrease of the signal-to-noise ratio that would cause missile break lock to occur and the resultant change in effective Pk of RAM. Success of this effort is a vital portion of the overall plan to develop and field a Naval HELWS to meet future Naval operational requirements. In order to achieve required milestones this ship defense enhancement capability must be shown as viable. Taking the concept to a flight demonstration phase requires preparation of detailed system and test requirements, concept definition work, and "over the water" field testing at fairly long ranges. The engineering analysis will assure technical feasibility of the proposed testing and the expected results. Engineering efforts will continue in FY 06 on the system and test requirements, and system architecture studies to support a flying target demo utilizing a prototype 1-micron laser weapon system.

FY 06 funding was provided for acquisition of a second laser (20kW) to provide the capability to test/demonstrate combined laser operations, and engineered conversion of these lasers to demonstrate longer range with higher output power. FY 07 funding will provide the system engineering and application of the beam conversion technology, procured and developed with FY 05/06 funding, to accomplish beam combining of the two lasers to provide and demonstrate a 30kW laser weapon capability at significantly longer ranges.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program (Cont.)

Optical Line Replaceable Units/9824	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.961	0.996	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

The FY 07 Plus up will support the detailed design and development of a prototype, and test a multifunction, low power laser Optical Line Replacement Units (OLRUs). This prototype is referred to as the Integrated Reconnaissance/targeting and Intervention Sensor (IRIS) OLRU. This funding allows for the continuing implementation of ultra short pulse laser micromachining processes for ceramic circuit board development and continues development of advanced processing techniques in support of semiconductor and dialectric processing.

Current operational environments dictate that precision micromachining technology, which does not introduce residual thermal or mechanical stress in materials, e.g., circuit boards, semiconductor materials, fuel injectors, be developed and utilized to increase reliability in deployed tactical equipment/systems. Optical Line Replaceable Units (OLRUs) will minimize equipment/system volume, weight, cooling, and electrical requirements, in addition to increasing reliability. The potential for advanced electronics and semiconductor manufacturing improvements in accuracy and efficiency drives the urgency to deploy ultra short pulse laser micromachining into the entire Department of Defense (DoD) industrial base in support of ongoing operations.

This FY06 effort addressed a laser system designed that parts subject to failure were easily accessible and could be replaced in a simple and repeatable fashion by end users. These parts would be contained in sealed, Line Replaceable Units (LRUs). A military technician would then be able to replace failed LRUs on site with minimal time and support equipment. It would also be possible to develop internal monitors within the weapon system to verify successful LRU replacement without firing the High Energy Laser (HEL). The ability of the end user to service the laser has promise for vast savings in repair costs as well as time utilization for a single laser unit.

The introduction of LRUs radically changes the way future combat-ready HEL systems are designed. In particular, the Optical Line Replaceable Unit (O-LRU) effort may spawn new technologies and design strategies needed for the Advanced Tactical Laser (ATL) transition from an Advanced Concept Technology Demonstration (ACTD) to a robust, reliable, and field sustainable operational system.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program (Cont.)

Electromagnetic Launcher (Rail Gun) 9183	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.908	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Funding is provided to assess the shipboard impact and to demonstrate the feasibility of a kinetic energy electromagnetic rail gun. A rail gun accelerates projectiles to hypervelocity without the aid of propellant charges. It has the potential to provide the Navy with higher velocity warheads, reduced flight times, and increased range while eliminating the hazards of propellant charges and unexploded munitions.

An assessment of implementing an electromagnetic launcher as a future flight upgrade to the DD(X) destroyer will be conducted. This assessment would determine the ship electric power system and thermal management impacts, leveraging the existing Integrated Power System (IPS) architecture.

This effort develops prototype hardware that supports risk reduction of a potential shipboard implementation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program (Cont.)

Deploy Ultra-Short Pulse Laser Dev 9998	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	2.491	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Joint Vision 2020 requires the assessment and demonstration of the complementary nature of High Energy Laser (HEL) Weapon Systems, coupled with missiles/guns for ship self-defense. This funding supports the accomplishment of the requisite engineering, design, assessment, test, and demonstration of a deployable Ultra-Short Pulse Laser.

Low to moderate power HEL systems offer the potential for complementing ship self-defensive weapon systems at tactically significant ranges. The ability to damage or disable electronic and optical components has been demonstrated. Critical to employment of this capability is the accomplishment of the system engineering and design, and the analysis of the resultant engagement effects. This effort is vital to the Navy's effort to develop and field a deployable laser that will meet near and mid term Navy requirements.

The current world threat environment mandates an urgency in providing the most up-to-date technology based solutions to counter littoral and asymmetric threats. Funds are required to engineer, design, test, and demonstrate weapon-grade laser capabilities that can be deployed in the near and mid term that will counter the requisite threats.

FY 07 funding will provide the system engineering, system design, and prototype development/demonstration of a deployable ultra-short pulse laser.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program (Cont.)

Prototype Instr Sys for MUTC 9A01	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	1.096	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

FY 07 funding is provided to design and build a prototype capability for Multi-Service and Special Operations Forces to train in an urban environment. This project would meet the need for a computer enhanced urban training site that allows for live/virtual/constructive training to be integrated with advanced technology. The project will identify deficiencies in the existing infrastructure at Muscatatuck and identify the respective solutions that can be solved through a phased installation approach of equipment, instrumentation, wireless-connectivity, and enhanced computer capabilities. The site will then be able to provide the urban training environment necessary to all services.

The Joint Forces Command has established the need for sites that have the capability to conduct mission rehearsals, planning, and exercises within an urban environment. These sites need to provide a venue for joint intergovernmental, interagency, and special operations training. More specifically, training infrastructures need to be put in place that will allow today's armed forces to meet the need for Military Operations on Urban Terrain (MOUT) and the Military Utility Assessment Range (MUAR). This project will allow such capabilities to be put in place at the Muscatatuck Urban Training Center. Urban training comprises one of the most actively studied issues in the armed forces today, with a substantial amount of investment for range infrastructure being planned in the near to midterm to improve MOUT. This push towards urban training is based on the changing demographics in world population towards major urban centers vice rural areas. Current military operations show that it is increasingly likely that forces will engage in the midst of urban populations as opposed to the open field.

The current world threat situation mandates an urgency in providing the most up-to-date technology-based solutions. It is imperative that our forces train in similar environments to what they will actually face. The training strategy being developed by U.S. Forces focuses on progressively more complex training, beginning with individual and team training on an Urban Assault Course, more advanced training in a live-fire shoot house, and finally company, battalion, and brigade training in a Combined Arms Collective Training Facility. Crowd control and separation of antagonists from civilians is another area that requires specialized training and equipment. The Indiana National Guard is developing the Muscatatuck Urban Training Center to become a full-immersion contemporary urban operating environment for doctrinal training events that can be used as a MUAR for advanced technology.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603925N Directed Energy and Electric Weapon System	9999 - Congressional Plus Ups - Various

B. Accomplishments/Planned Program (Cont.)

Directed Energy Research 9A28	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	19.426	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

This funding will be utilized to accelerate development of Directed Energy and Electric Weapon Systems for the U.S. Navy. Funding will be used for advanced component and prototype development of the following technology areas associated with Directed Energy and Electric Weapon Systems research:

Lethality/Vulnerability research, analysis, and engineering
Electromagnetic Rail Gun Weapon System (EMRG WS) research and engineering
Free Electron Laser (FEL) research and analysis
High Energy Laser (HEL) research, engineering, analysis, and design.

Joint Vision 2020 highlights the emerging asymmetric threat facing the United States today and in the future. This includes conflict involving conventional weapons against traditional threats, it also includes those “ambiguous situations residing between peace and war, such as peacekeeping and peace enforcement operations, as well as noncombatant humanitarian relief operations and support to domestic authorities.”

The current world threat situation mandates an urgency in providing the most up-to-date technology-based solutions to our war fighters. It is imperative that our forces maintain technical superiority. With the Navy’s programmed introduction of ship integrated power systems, the foundation has been established for fielding shipboard directed energy and electric weapon systems. Laser systems provide for the speed of light engagements, with cost savings realized through the reduction or elimination of defensive missiles and guns/magazines required by current self protection missile and gun systems. Lasers also provide a force protection capability that has low collateral damage with graded lethality. The rail gun will provide the Navy with persistent fire power that will accelerate projectiles to hypervelocity without the aid of propellant charges to provide higher velocity warheads, reduced flight times, and increased range while eliminating the hazards of propellant charges and unexploded munitions.

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0604272N, TADIRCM		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	7.789	98.361	27.569	52.566	38.578	42.522	43.363	44.144
3040 ANTI-MISSILE TECHNOLOGY (TADIRCM)	7.789	17.461	27.569	52.566	38.578	42.522	43.363	44.144
3166 CH-53 DIRCM TAP		80.900						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This element includes development of electronic warfare systems for the United States Navy (USN), United States Marine Corps (USMC), and the United States Army (USA) tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, precision targeting, USN and USMC communications and non-communications jammers and development and testing of electronic warfare devices for emerging threats and emergency contingencies.

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:	9.807	20.527	45.689	63.765
Current President's Budget:	7.789	98.361	27.569	52.566
Total Adjustments	-2.018	77.834	-18.120	-11.199

Summary of Adjustments				
Congressional Reductions				
Congressional Rescissions				
Congressional Undistributed Reductions	-0.151	-0.066		
Congressional Increases	0.005	80.900		
Economic Assumptions			0.077	0.508
Miscellaneous Adjustments	-1.872	-3.000	-18.197	-11.707
Subtotal	-2.018	77.834	-18.120	-11.199

C. SCHEDULE:

Project Unit 3040. Schedule changes such as Strike DIRCM System Development and Demonstration (SDD) contract, Critical Design Review (CDR), and Preliminary Design Review (PDR), reflect program restructure and Tactical Aircraft Direct InfraRed Countermeasures (TADIRCM) repricing reduction in FY 2008 and FY 2009. Program restructure moved the start of the Assault effort forward and delayed the Strike effort. Increased scope added by the AoA Executive Steering Committee affected the start and completion of the Strike and Assault Alternative of Analysis (AoA). The completion of the Early Operational Assessment (EOA) flight test, the POD contract, the EOA flight test, and the EOA Report was extended to allow for repair of damage to the lense caused by technical issues with the laser during software testing. Aquisition Milestones are now reflected in the schedule.

D. TECHNICAL:

Project Unit 3040. During the evaluation of the integration and performance of the DIRCM components into a system, excessive heat has caused component failure. As a result of technical investigations, configuration changes and corrective action for all known integration issues have been corrected at this time.

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM			PROJECT NUMBER AND NAME 3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)				
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
3040 ANTI-MISSILE TECHNOLOGY (TADIRCM)	7.789	17.461	27.569	52.566	38.578	42.522	43.363	44.144
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The TADIRCM system provides the warfighter with protection against surface and air-to-air missiles. This project looks at the InfraRed (IR) Man Portable Air Defense (MANPAD) and surface-to-air (SAM) threat. The EOA project to flight test was funded by an FY 2005 Congressional Add and anticipates Initial Operational Capability (IOC) for Strike DIRCM in FY 2017. IOC for Assault DIRCM is anticipated in FY 2014.

Strike DIRCM is designed for fixed wing aircraft that is needed for protection against surface-to-air and air-to-air IR threats. Strike DIRCM regains airspace below 20K feet and neutralizes the IR threat.

Assault DIRCM is an advanced capability against the IR SAM threat directed at rotary wing aircraft.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

EOA and Podded DIRCM System	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost	7.789	17.461	27.569	52.566
RDT&E Articles Qty				

Congressional Reductions

Design and build a podded DIRCM system, incorporating missile warning sensors, system processor and pointer/tracker, and flight test of the pod to provide an assessment of the advanced technology in simulated flight conditions. Information gained during this EOA will be leveraged to develop and field a DIRCM system for Naval aircraft by 2017. Fund efforts for completion of the AoA, completion of EOA flight testing, follow-on EOA report to Congress, and efforts to support Milestone B decision for Assault DIRCM. Development of applicable modeling and simulation models will begin in FY 2007. Award Assault SDD contract. Continue risk reduction flights prior to Strike SDD. Fund SDD efforts for Assault DIRCM. The PDR for the Assault SDD contract is scheduled for the 2nd quarter of FY 2009.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
APN-5, Line 53, Common ECM, OSIP 005-08, 057600			29.661	25.952	2.837	44.356	45.058	45.779	2,134.639	2,328.282

D. ACQUISITION STRATEGY:

The management and acquisition strategy for the TADIRCM system Initial Suitability Assessment entails a competitive phased approach to reduce risk to cost and schedule through viable competition. The EOA project awarded two contracts for the pointer/tracker/laser development, one contract for pod development, and one contract for missile warning sensors. The Naval Research Lab is 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.

The Assault DIRCM program will leverage technology developed by the Army's Suite of Integrated InfraRed Countermeasures (SIIRCM) program. The Assault DIRCM program will address more advanced IR SAMs.

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 that the system performance meets the tactical environment.

Exhibit R-3 Cost Analysis (page 1)

DATE: February 2007

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

PROGRAM ELEMENT: 0604272N, TADIRCM

PROJECT NUMBER AND NAME: 3040, ANTI-MISSILE TECHNOLOGY (TADIRCM)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Aircraft Integration	CPFF	VARIOUS		3.500	02/07	.800	12/07	.900	12/08	8.240	13.440	13.440
Ancillary Hdw Development	TBD	TBD				.400	12/07	5.300	12/08	5.900	11.600	11.600
EMD Support	TBD	TBD						.200	TBD	2.400	2.600	2.600
Modeling/Simulation	WX	VARIOUS		.300	11/06	.300	12/07	.400	12/08	1.000	2.000	
Primary Hdw Development	CPIF	GALAXY SCIENTIFIC, EGGHARBOR WA		5.715	03/07	14.179	TBD	29.935	TBD	82.048	131.877	131.877
Systems Engineering	VARIOUS	VARIOUS	4.992	0.760	12/06	1.300	VARIOUS	1.300	VARIOUS	3.470	11.822	11.822
Systems Engineering	CPFF	TEKLA, WOODBRIDGE VA		0.400	01/07						.400	.400
SUBTOTAL PRODUCT DEVELOPMENT			4.992	10.675		16.979		38.035		103.058	173.739	

Remarks:

SUPPORT												
Configuration Management	WX	VARIOUS		.100	02/07	.100	11/07	.100	11/08	.400	.700	
Development Support	WX	NAWCWD, PT MUGU CA		.350	11/06						.350	
Integrated Logistics	WX	NAWCAD, PATUXENT RIVER MD		.180	11/06	1.451	TBD	2.392	TBD	10.179	14.202	
Software Development	WX	NAWCWD, PT MUGU CA		.200	12/06	1.600	TBD	2.800	TBD	11.139	15.739	
Technical Data	TBD	TBD				.200	TBD	.800	TBD	1.700	2.700	
Studies and Analysis	WX	NSWC, CRANE DIVISION IN		.574	12/06						.574	
SUBTOTAL SUPPORT				1.404		3.351		6.092		23.418	34.265	

Remarks:

TEST & EVALUATION												
Congressional Reductions	WX	NRL, WASHINGTON DC		.250	02/07	2.759	12/07	2.000	12/08	7.098	12.107	
ENG & Evaluation	CPFF	VARIOUS	2.768			.400	11/07				3.168	3.168
ENG & Evaluation Government	WX	VARIOUS	.702	.670	11/06	.700	11/07	.500	11/08	6.200	8.772	
Live Fire Support	VARIOUS	VARIOUS		.500	03/07			3.600	VARIOUS	3.700	7.800	
Operational Test & Evaluation		VARIOUS	.162			.400	02/08			6.000	6.562	
Technical Maturation	WX	NAWCAD, PATUXENT RIVER MD		.363	12/06						.363	
Test Assets	WX	NAWCWD, CHINA LAKE CA		.250	02/07					6.152	6.402	
SUBTOTAL TEST & EVALUATION			3.632	2.033		4.259		6.100		29.150	45.174	

Remarks:

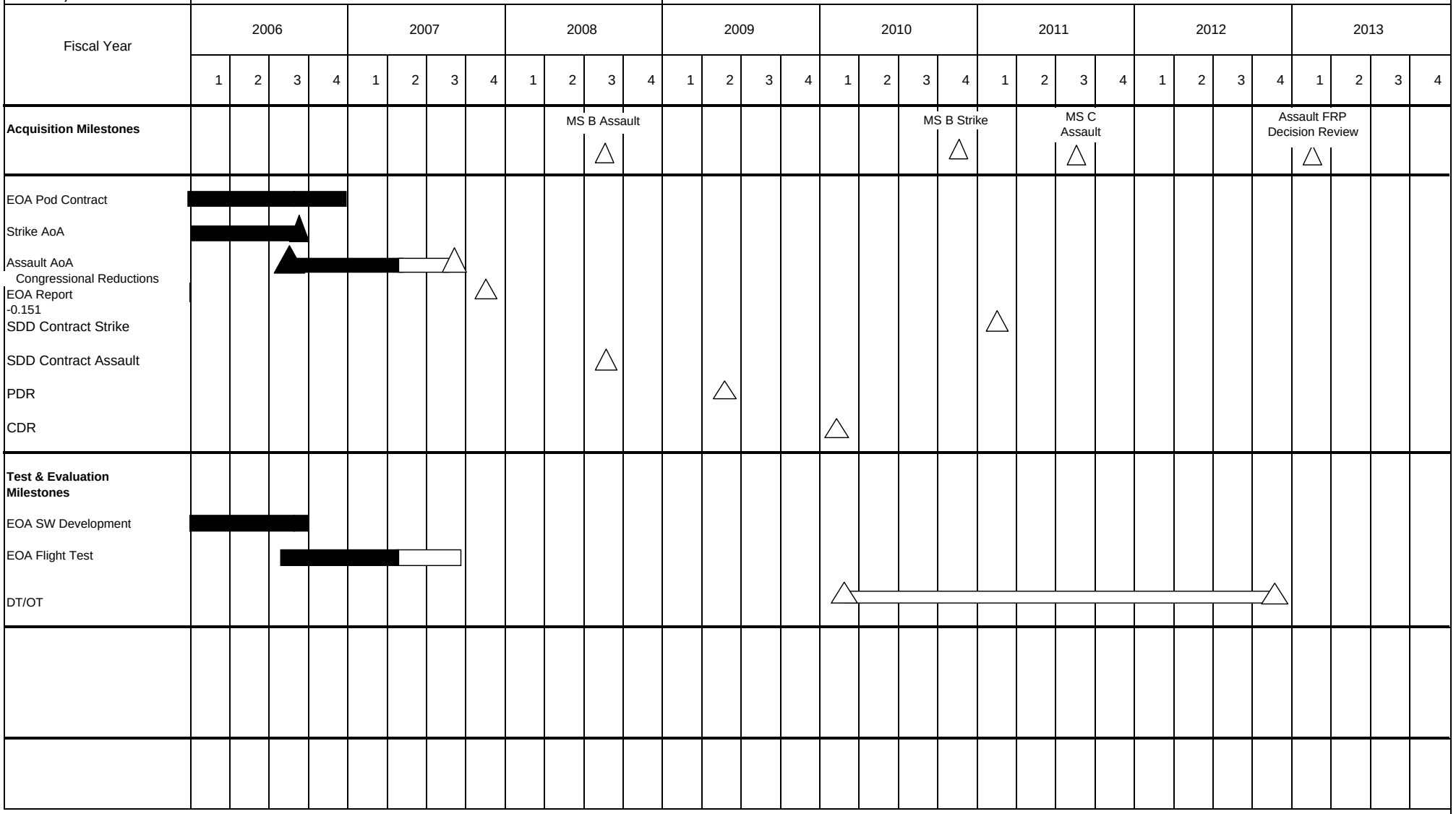
MANAGEMENT												
Direct Support Costs	WX	VARIOUS	.196	.150	VARIOUS	.045	VARIOUS	.052	VARIOUS	.278	.721	
Eng & Tech Spt	CPFF	VARIOUS	1.248	1.178	11/06	.500	11/07	.500	11/08	2.000	5.426	5.426
Government Engineering Support	WX	VARIOUS	1.514	.500	11/06	1.650	11/07	1.392	11/08	7.513	12.569	
Mgt & Prof Suppt Srvc	CPFF	VARIOUS	.331	.694	11/06	.200	11/07	.200	11/08	.800	2.225	2.225
NAWCAD/Pax Support	WX	NAWCAD, PATUXENT RIVER MD	.231	.500	11/06	.400	11/07			1.600	2.731	
NAWCWD/Pt Mugu Support	WX	NAWCWD, PT MUGU CA		.200	02/07						.200	
Travel	TO	NAVAIR	.219	.127	10/06	.185	10/07	.195	10/08	.790	1.516	
SUBTOTAL MANAGEMENT			3.739	3.349		2.980		2.339		12.981	25.388	

Total Cost			12.363	17.461		27.569		52.566		168.607	278.566	

Remarks:

CLASSIFICATION: **UNCLASSIFIED**

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET A	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0604272N TADIRCM	3040 TADIRCM



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0604272N TADIRCM				PROJECT NUMBER AND NAME 3040 TADIRCM			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
MS B Assault			3Q					
MS B Strike					4Q			
MS C Assault						3Q		
Assault FRP Decision Review								1Q
EOA Pod Contract	1Q-4Q							
Strike AoA	1Q-3Q							
Assault AoA	3Q-4Q	1Q-3Q						
EOA Report		4Q						
SDD Contract Strike						1Q		
SDD Contract Assault			3Q					
PDR				2Q				
CDR					1Q			
EOA SW Development	1Q-3Q							
EOA Flight Test	3Q-4Q	1Q-3Q						
DT/OT					1Q-4Q	1Q-4Q	1Q-4Q	
Congressional Reductions								

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604272N, TADIRCM	PROJECT NUMBER AND NAME 3166 CH-53 DIRCM TAP

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
3166 CH-53 DIRCM TAP		80.900						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This supplemental helps to accelerate the fielding of an advanced InfraRed Countermeasure (IRCM) capability for United States Navy (USN)/United States Marine Corps (USMC) rotary wing platforms. This capability will significantly increase platform survivability against Man Portable Air Defense (MANPADs) and is required to defeat advanced threats expected to be encountered in the Global War on Terrorism (GWOT) theaters. Without this capability USN/USMC rotary wing platforms will be limited in their ability to engage/complete missions in support of GWOT. This effort will entail the qualification and tests required to field an advanced IRCM capability on the CH-53E,in addition to the non recurring engineering costs necessary to address the limitation of the current Assault Support Equipment (ASE) Missile Warning Sensor (MWS) capability on forward deployed USN/USMC rotary wing platforms.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

Qualification Tests	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost		80.900		
RDT&E Articles Qty				
Congressional Reductions				

This funding will accomplish the qualification tests required to field an advanced IRCM capabiity on the CH-53E and the non recurring engineer costs necessary to address limitations of the current ASE MWS capability on forward deployed USN/USMC rotary wing platforms. The advanced IRCM capabiity requires system integration and engineering manufacturing development to existing hardware and software configuration of the CH-53 platform. Ancillary hardware development is required to support optimal utilization of IRCM detecting, tracking and targeting of the sensors and lasers. Modeling and simulation will support development of software and operability testing. The MWS will be integrated on multiple forward deployed USN/USMC rotary wing platforms. Additional ancillary hardware development is required to support A Kit development for the MWS.

C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

D. ACQUISITION STRATEGY:

Qualification of the CH-53E DIRCM capability for operational use will occur in FY 2007. Contract execution of this effort is planned for the 2nd quarter of FY 2007. Upon completion of validating the CH-53E DIRCM is suitable for operational use, An Engineering Change Proposal will be executed in FY 2008 followed by a contract award for the procurement of the CH-53E DIRCM B-Kits. In addition, a contract award will be executed to modify the several USN/USMC platforms to accommodate an enhanced Ultra Violet MWS capability. This strategy is quick reaction response to provide a capability in support of GWOT.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE **PE 0604327N - Hard & Deeply Buried Target Defeat System Program**	

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Total PE Cost	6.894	19.924	126.434	20.000	0.000	0.000	0.000	0.000
J9611 - Advanced Conventional Strike Capability (CTM)	0.000	19.924	126.434	20.000	0.000	0.000	0.000	0.000
J9887 - Submarine Launched Intermediate Range Ballistic Missile (SLIRBM)	6.894	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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, 2008, and 2009 of a modification to the TRIDENT II (D5) strategic weapon system (SWS) known as the Conventional TRIDENT Modification (CTM) which will allow it to carry conventional payloads.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE **PE 0604327N - Hard & Deeply Buried Target Defeat System Program**	

B. (U) Program Change Summary:

	FY 2006	FY 2007	FY 2008	FY 2009
Previous Presidents Budget (FY 2008 President's Controls)	7.2	77.0	69.0	0.0
Current BES Controls (FY 2008 President's Budget)	6.9	19.9	126.4	20.0
Total Adjustments	-0.3	-57.1	57.4	20.0
Summary of Adjustments				
SBIR	-0.200	0.000	0.000	0.000
Congressional Reduction	-0.100	-57.000	0.000	0.000
Program Changes	0.000	-0.100	57.400	20.000
Subtotal	-0.300	-57.100	57.400	20.000

C. (U) Other Program Funding Summary: See enclosed R-2a for project data.

D. (U) Acquisition Strategy: See enclosed R-2a for project data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					PROJECT NUMBER AND NAME **Advanced Conventional Strike Capability J9611**			
COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Project Cost J9611 Advanced Conventional Strike Capability	0.000	19.924	126.434	20.000	0.0	0.0	0.0	0.0
RDT&E Articles Qty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

A. (U) MISSION DESCRIPTION AND BUDGET ITEM 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 Precision Global Strike (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 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROJECT NUMBER AND NAME: **J9611 Advanced Conventional Strike Capability Demonstration**

B. (U) Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Conventional Strike Demo	0.0	19.9	126.4	20.0
RDT&E Articles Quantity				

(U) FY 2006 PLAN NA

(U) FY 2007 PLAN ($19.9)

(U) Risk reduction efforts in support of Precision Global Strike concepts.
(U) Demonstrate Flechette payload design concept at hypersonic speeds.
(U) Support NAS study on CTM
(U) Study common technologies, components, and interfaces for warhead, guidance, and package design.

(U) FY 2008 PLAN ($126.4)

(U) 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.
(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.
(U) Complete development of Advance Conventional Strike Capability for TRIDENT II (D5).
(U) Integrate and test Navigation Guidance and Control system (Avionics Computer, SRIMU, Advance GPS Receiver) for maneuvering reentry body.
(U) Complete development and testing of conventional payload/warhead and modified Mk4 fuze assembly.
(U) Flight test alternative Reentry Body materials and CTM components/assemblies for environmental performance.

(U) FY 2009 PLAN ($20.0)

(U) Complete component and full system ground test program to validate guidance, missile and reentry subsystem interfaces.
(U) Complete preparations for transition to production as components and assemblies complete development test phase.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROJECT NUMBER AND NAME: **J9611 Advanced Conventional Strike Capaiblity Demonstration**

C. (U) Other Program Funding Summary: (Dollars in Thousands)

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Complete	Total Cost
WPN/BA1/1250/PE 0101228N	0.0	0.0	36.0	87.0	96.0	0.0	0.0	0.0	0.0	219.0
OPN/BA4/5358/PE 0101221N	0.0	0.0	13.0	11.0	7.0	0.0	0.0	0.0	0.0	31.0

D. (U) Acquisition Strategy:

Sole Source Contracts

E. (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

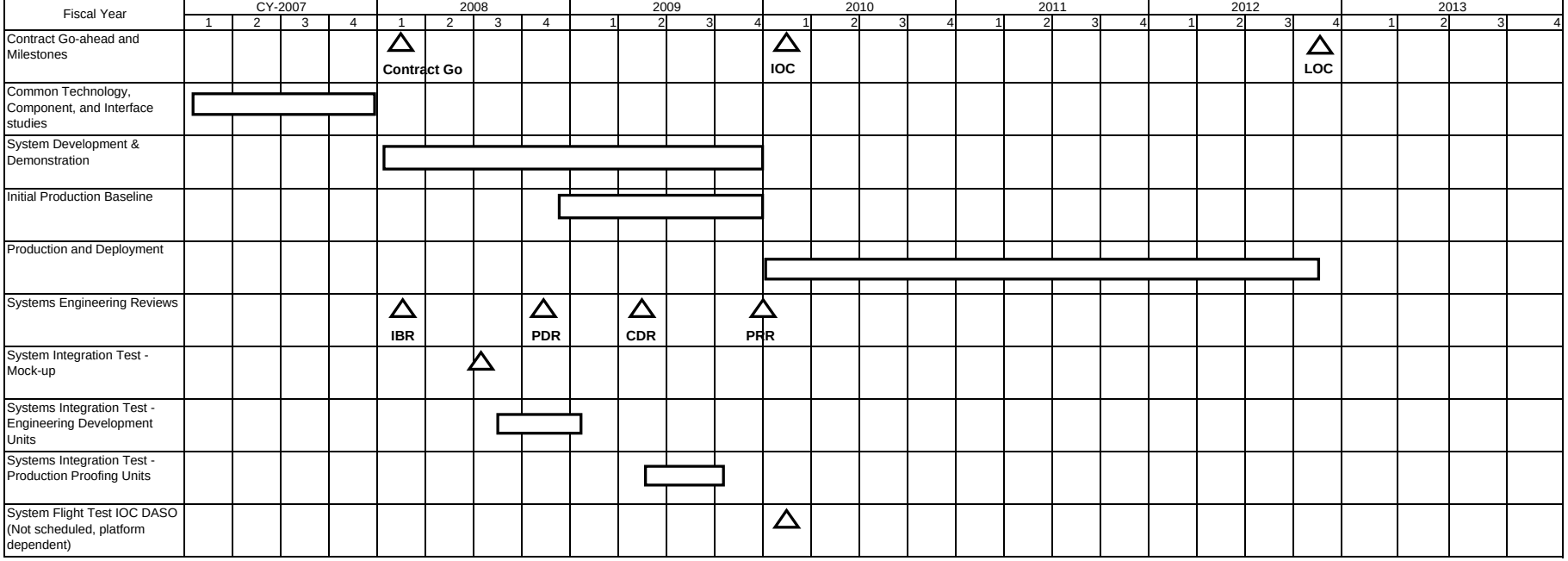
CLASSIFICATION:

EXHIBIT R-3, Cost Analysis		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROGRAM ELEMENT **PE 0604327N Hard & Deeply Buried Target Defeat System**	Project Number and Name **J9611 - Advanced Conventional Strike Capability Demonstration**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 06 Cost	FY0 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support & Management														
Conventional Strike	SS-CPFF	LMSS (CA)	9.3									Cont.	Cont.	TBD
Conventional Strike	PD	APL	0.2			0.2	10-06					Cont.	Cont.	TBD
Conventional Strike	SS-CPFF	AERO (CA)	0.1									Cont.	Cont.	TBD
Conventional Strike (CTM)	MIPR	DOE (NM)										Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	LMSS (CA)				0.5	10-06	0.5	10-07			Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	CSDL (MA)				0.2	10-06					Cont.	Cont.	TBD
Conventional Strike (CTM)	VARIOUS	VARIOUS				2.0	10-06	3.0	10-07			Cont.	Cont.	TBD
Development and Development														
Conventional Strike	SS-CPFF	LMSS (CA)										Cont.	Cont.	TBD
Conventional Strike	PD	APL										Cont.	Cont.	TBD
Conventional Strike	SS-CPFF	AERO (CA)										Cont.	Cont.	TBD
Conventional Strike (CTM)	MIPR	DOE (NM)				9.0	10-06	75.0	10-07			Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	LMSS (CA)				2.8	10-06	35.5	10-07			Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	CSDL (MA)				2.2	10-06	9.6	10-07			Cont.	Cont.	TBD
Conventional Strike (CTM)	VARIOUS	VARIOUS						2.8	10-07			Cont.	Cont.	TBD
Test and Evaluation														
Conventional Strike	SS-CPFF	LMSS (CA)										Cont.	Cont.	TBD
Conventional Strike	PD	APL										Cont.	Cont.	TBD
Conventional Strike	SS-CPFF	AERO (CA)								2.0		Cont.	Cont.	TBD
Conventional Strike (CTM)	MIPR	DOE (NM)				3.0	10-06			15.0		Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	LMSS (CA)								1.0		Cont.	Cont.	TBD
Conventional Strike (CTM)	SS-CPFF	CSDL (MA)								2.0		Cont.	Cont.	TBD
Conventional Strike (CTM)	VARIOUS	VARIOUS										Cont.	Cont.	TBD
Subtotal Product Development			9.6	0.0		19.9		126.4		20.0		Cont.	Cont.	TBD
Remarks:														
Total Cost			9.6	0.0		19.9		126.4		20.0		Cont.	Cont.	
Remarks:														

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROGRAM ELEMENT NUMBER AND NAME: **PE 0604327N Hard & Deeply Buried Target Defeat System**	Project Number and Name **J9611 - Advanced Conventional Strike - Conventional TRIDENT Mod (CTM), Project 1**	



R-1 SHOPPING LIST - Item No. 79 - 7 of 11

CLASSIFICATION:

EXHIBIT R-4a, Schedule Detail							DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**			PROGRAM ELEMENT NUMBER AND NAME: **PE 0604327N Hard & Deeply Buried Target Defeat System**		Project Number and Name **J9611 - Advanced Conventional Strike - Conventional TRIDENT Mod (CTM), Project 1**		
Fiscal Year	**CY-2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Contract Go-ahead and Milestones		**1Q**		**1Q**		**4Q**	
Common Technology, Component, and Interface studies	**1-4Q**						
System Development & Demonstration		**1-4Q**	**1-4Q**				
Initial Production Baseline		**4-Q**	**1-4Q**				
Production and Deployment				**1-4Q**	**1-4Q**	**1-4Q**	
Systems Engineering Reviews		**1-4Q**	**1-4Q**	**1-Q**			
System Integration Test - Mock-up		**3Q**					
Systems Integration Test - Engineering Development Units		**3-4Q**	**1Q**				
Systems Integration Test - Production Proofing Units			**2-4Q**				
System Flight Test IOC DASO (Not scheduled, platform dependent)				**1Q**			

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROJECT NUMBER AND NAME **J9887** **Submarine Launched Intermediate Range Ballistic Missile**	

COST ($ in Millions)	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Project Cost J9887 Submarine Launched Intermediate Range Ballistic Missile	6.894	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

For the Advanced Strike Capability Demonstrations, the Navy's Strategic Systems Programs (SSP) intends to demonstrate solid rocket motor technologies suitable for development into an affordable, high performance submarine launched intermediate range ballistic missile (SLIRBM). The first demonstration, contracted in FY 2005 in Project J9611, will consist of two (2) prototype static full-scale firings and considerable weapon system trade-offs. Target technologies will emphasize reliability, producibility, and affordability. This prototype rocket motor demonstration test will include flight control and guidance simulation signals to the rocket motor control system. The second demonstration, to be contracted in FY 2006, will consist of one (1) chamber hydro-burst test and one (1) prototype static full-scale test firing. Again, the emphasis of this demonstration will be affordability which is defined as the combination of the lowest projected boost motor subsystems for all aspects of motor development cost and lowest possible expected average cost.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROJECT NUMBER AND NAME: **J9887 Submarine Launched Intermediate Range Ballistic Missile**

B. (U) Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Conventional Strike Demo	6.9	0.0	0.0	0.0
RDT&E Articles Quantity				

(U) FY 2006 PLAN NA
(U) ($6.9M) Continue Advanced Conventional Strike Capability efforts. Conduct a strategic ballistic missile technology demonstration.

FY2006 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 Thrust Vector Control (TVC) actuation.

(U) FY 2007 PLAN N/A

(U) FY 2008 PLAN N/A

(U) FY 2009 PLAN N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	PROJECT NUMBER AND NAME: **J9887 Submarine Launched Intermediate Range Ballistic Missile**

C. (U) Other Program Funding Summary: (Dollars in Thousands)

FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total Complete	Total Cost
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

D. (U) Acquisition Strategy:

Full and Open Competition

E. (U) Major Performers:

- TBD - Open Competition

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY REASEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0604450N, JOINT AIR TO GROUND MISSILE		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost			15.000					
2211 JOINT AIR TO GROUND MISSILE			15.000					

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) JOINT AIR TO GROUND MISSILE: Funding to be used towards research and development of air-to-ground munitions and systems and towards risk reduction activities. Efforts will be focused on weapons components and areas respresenting the greatest technical risk, including seeker, fuzing, warhead, propulsion, insensitive munitions compliance, platform integration, and targeting.

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:	0.000	0.000	0.000	0.000
Current President's Budget:	0.000	0.000	15.000	0.000
Total Adjustments	0.000	0.000	15.000	0.000

Summary of Adjustments				
Congressional Reductions				
Congressional Rescissions				
Congressional Undistributed Reductions				
Congressional Increases				
Economic Assumptions				
Miscellaneous Adjustments			15.000	
Subtotal	0.000	0.000	15.000	0.000

Schedule: Not Applicable.

Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604450N, JOINT AIR TO GROUND MISSILE	PROJECT NUMBER AND NAME 2211, JOINT AIR TO GROUND MISSILE

COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2211 JOINT AIR TO GROUND MISSILE			15.000					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) JOINT AIR TO GROUND MISSILE (JCM): Funding will be used towards research and development of air-to-ground munitions and systems and risk reduction activities. Efforts will be focused on weapons components and areas respresenting the greatest technical risk, including seeker, fuzing, warhead, propulsion, insensitive munitions compliance, platform integration, and targeting.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

JOINT AIR-TO-GROUND MISSILE	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments / Effort / Sub-total Cost			15.000	
RDT&E Articles Qty				

Funding will be used towards research and development of air-to-ground munitions and systems and risk reduction activities. Efforts will be focused on weapons components and areas respresenting the greatest technical risk, including seeker, fuzing, warhead, propulsion, insensitive munitions compliance, platform integration, and targeting.

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	To Complete	Total Cost
RDT&E ARMY P. E. 0604450A			53.500				53.500

D. ACQUISITION STRATEGY: Not Applicable.

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4		PROGRAM ELEMENT 0604450N, JOINT AIR TO GROUND MISSILE				PROJECT NUMBER AND NAME 2211, JOINT AIR TO GROUND MISSILE						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2007 Cost	FY 2007 Award Date	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEVELOPMENT												
Aircraft Integration	Various	Various				5.000	Various				5.000	
Aircraft Integration	Various	Various				.500	Various				.500	
Systems Eng - WD	Various	Various				6.800	Various				6.800	
SUBTOTAL PRODUCT DEVELOPMENT						12.300					12.300	

Remarks:

SUPPORT												
SW SUPP	Various	Various				.500	Various				.500	
SUBTOTAL SUPPORT						.500					.500	

Remarks:

TEST & EVALUATION												
Dev T&E (NAWCAD)	Various	Various				.450	Various				.450	
SUBTOTAL TEST & EVALUATION						.450					.450	

Remarks:

MANAGEMENT												
Contr Eng Sup - ETS (NON-FFRDC	PID	TBD				.175	Various				.175	
Contractor Eng Supt - Other	TBD	TBD				.275	Various				.275	
Government Eng Sup	WX	NAWCAD, PATUXENT RIVER MD				1.000	Various				1.000	
Program Mgmt Sup	Various	Various				.230	Various				.230	
Travel - 242	TO	NAVAIR, PAXTUXENT RIVER MD				.065	Various				.065	
Travel - Other	MIPR	USA MISSILE CMD, REDSTONE ARS AL				.005	Various				.005	
SUBTOTAL MANAGEMENT						1.750					1.750	

Remarks:

Total Cost						15.000					15.000	.000

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0604450N, Joint Air-to-Ground Missile	PROJECT NUMBER AND NAME 2211, Joint Air-to-Ground Missile	

Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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																																
Concept Definition Efforts																																
Test & Evaluation Milestones Risk Reduction Efforts																																
Production Milestones																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: February 2007	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-4	PROGRAM ELEMENT 0604450N, Joint Air-to-Ground Missile				PROJECT NUMBER AND NAME 2211, Joint Air-to-Ground Missile			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Concept Definition Efforts			1Q-4Q					
Risk Reduction Efforts			1Q-4Q					

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

COST: (Dollars in Thousands)

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
Total PE	35,590	43,676	42,295	39,021	49,642	59,479	66,191	67,325
0798 OTH TARGETING	1,589	1,998	2,113	2,024	2,112	2,331	2,369	2,409
2144 SPACE AND ELECTRONIC WARFARE ENGINEERING	10,821	10,988	6,344	4,330	4,808	6,784	12,505	12,617
2357 MARITIME BATTLE CENTER	23,180	30,690	33,838	32,667	42,722	50,364	51,317	52,299

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 MBC project (2357) focuses on Fleet experimentation in order to eliminate warfighting gaps and validate Navy Concept of Operations (CONOPS) and Doctrine coordinated by the Navy Warfare Development Command (NWDC). The MBC also manages US Fleet Forces Command's (USFFC) SEA TRIAL program of Fleet experimentation that is administered by the SEA TRIAL Executive Steering Group (STESG). Both MBC and SEA TRIAL integrate emergent concepts and technologies through experiments/analysis/modeling and simulation to support warfighting capability development. SEA TRIAL experimentation is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) warfighting gaps through focused Operational Agent (Commander Second Fleet, Commander Third Fleet and Commander Naval Network Warfare Command) led experimentation. The USFFC chaired Flag level SEA TRIAL Executive Steering Group prioritizes proposed SEA TRIAL experiments annually. The MBC will also serve as the Navy representative to the Joint Battle Center and the Battle Labs of other services.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

The OTH-T and SEW Engineering projects (0798 and 2144 respectively) 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 the Joint and Coalition Theater. The mission of these projects are 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, these projects ensure 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).

B. PROGRAM CHANGE SUMMARY:

	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget Submission	35,224	43,909	51,445	57,930
Congressional Undistributed Reductions/Rescissions	151	-233	0	0
Functional Realignment for OPNAV Program Support Costs	-258	0	0	0
Non-Pay Inflation Adjustments	0	0	-130	64
Program Adjustments	728	0	-9,168	-19,101
Rate Adjustments	0	0	148	128
SBIR Assessment	-255	0	0	0
FY 2008/FY 2009 President's Budget Submission	35,590	43,676	42,295	39,021

PROGRAM CHANGE SUMMARY EXPLANATION:
Technical: Not applicable

Schedule: Not applicable

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT

C. OTHER PROGRAM FUNDING SUMMARY:
Not applicable.

D. ACQUISITION STRATEGY:
Not applicable

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 Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) 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.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

COST: (Dollars in Thousands)

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
0798 OTH TARGETING	1,589	1,998	2,113	2,024	2,112	2,331	2,369	2,409

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), Information Technology (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 Navy Marine Corps Intranet/Base Level Information Infrastructure (NMCI/BLII) with the GIG. Currently, IP connectivity with Coalition forces is limited, requiring extensive backhaul through ashore infrastructure. 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. Standardization Agreement 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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2006	FY 2007	FY 2008	FY 2009
ADVANCED RELAY/WIRELESS/ANTENNA TECHNOLOGIES	389	728	771	739

FY 2006 Accomplishments:

Developed and tested Generation 1 and Generation 2 Spatially Aware Wireless Network (SPAWN) prototype antennas in breadboard form. Developed semi-automated design tools to speed-up the prototyping process. Developed the high-level network architecture for SPAWN.

FY 2007 Plans:

Design, fabricate, and test Generation 3 SPAWN prototype antennas in brassboard form. Field tests over both land paths and sea paths of point-to-point electronically-steerable wireless links to demonstrate tracking. The performance shown will confirm that our technology is ready for demonstration in Trident Warrior 2008.

FY 2008 Plans:

Design, fabricate, and test Generation 4 SPAWN prototype antennas in seaworthy brassboard form with wireless network equipment. Perform a line-of-sight (LOS) field demonstration of SPAWN in Trident Warrior 2008.

FY 2009 Plans:

Design, fabricate and test Generation 5 SPAWN antennas in integrated form with wireless network equipment. Perform an Over-the-Horizon (OTH) field demonstration of SPAWN in Trident Warrior 2009.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

	FY 2006	FY 2007	FY 2008	FY 2009
SUBNET RELAY	351	196	205	196

FY 2006 Accomplishments:

Completed Subnet Relay interoperability lab testing with the participation of Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS) nations. Simulated four-ship Subnet Relay networks with international interoperability. Validated multi-bearer routing architecture that allows more efficiency in application traffic over multiple links. Received Interim Authority to Operate (IATO) and Space and Naval Warfare Systems Command (SPAWAR) approval for participation in Trident Warrior 2006 (TW06). Completed ship installs and conducted a successful participation in Trident Warrior 06, including post exercise evaluations and generation of findings.

FY 2007 Plans:

Test and demonstrate Subnet Relay allied interoperability in Trident Warrior 07, with reuse of TW06 equipment and installation documentation as practicable. Investigate improvements to Subnet Relay protocol and pursue better integration with ARC-210 radios. Transition Subnet Relay to Program of Record by 2007.

FY 2008 Plans:

Continue to refine Subnet Relay allied interoperability in concert with Chief of Naval Operations for Communication Networks (OPNAV N6). Venues of opportunity will be exploited to validate and evaluate developed portions of Subnet Relay configurations through testing, trials, and demonstrations. Investigate airborne deployment of Subnet Relay.

FY 2009 Plans:

Continue to refine Subnet Relay allied interoperability in concert with OPNAV N6. Venues of opportunity will be exploited to validate and evaluate developed portions of Subnet Relay configurations through testing, trials, and demonstrations. Complete field demonstration of Subnet Relay airborne deployment.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

	FY 2006	FY 2007	FY 2008	FY 2009
SYSTEMS INTEGRATION & INTEROPERABILITY TESTING	399	495	524	502

FY 2006 Accomplishments:

Conducted/participated in three overall Joint/Navy integration and interoperability tests; facilitated one planning review for Joint Test and Evaluations; participated in Joint Users Interoperability Communications Exercise (JUICE) and other joint test events. This included two tests with Joint Distributed Engineering Plant (JDEP) and one with Multi Service Development Exercise (MSDE).

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 2008 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, JDEP, and other joint test events.

FY 2009 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, JDEP, and other joint test events.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

	FY 2006	FY 2007	FY 2008	FY 2009
INTEROPERABILITY VALIDATION	135	173	182	175

FY 2006 Accomplishments:

Used the Reconfigurable Land Based Test Sites (RLBTS) and OTH-T resources to validate GIG technologies prior to shipboard installation, supported eight Net Ready-Key Performance Parameters (NR-KPP) Migration Plan Developments and two joint interoperability C4ISR certifications to ensure interoperability requirements between sensors, weapon systems and information systems were met. These were accomplished in conjunction with Trident Warrior and Distributed Engineering Plant (DEP) experimentation and test events.

FY 2007 Plans:

Use the RLBTS and OTH-T resources to validate 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 2008 Plans:

Use the RLBTS and OTH-T resources to validate 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 2009 Plans:

Use the RLBTS and OTH-T resources to validate 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 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

	FY 2006	FY 2007	FY 2008	FY 2009
TESTING OTH-T SYSTEMS	315	406	431	412

FY 2006 Accomplishments:

Conducted five developmental, integration, developmental, 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) Common Synchronization Tools (CST) networks and other networks; two integration test events for GCCS-M and collaboration technologies within the GIG. These tests were done with GCCS-M4x/GCCS-M3x/AN-BYG-1/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.

GCCS-M: Global Command and Control System Maritime
AN-BYG-1: Submarine Weapons Control System
COE (M): Common Operation Environment (Maritime)
CAS: Collaboration at Sea
ATWCS/TTWCS: Advanced/Tactical Tomahawk Weapons Control System

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 COP 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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

FY 2008 Plans:

Conduct six developmental, integration, and certification tests, in accordance with OPNAVINST 9410.5, of Over-The-Horizon Targeting and combat systems with tactical data exchanged over COP 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. This includes developmental testing between Joint C2 systems and combat systems.

FY 2009 Plans:

Conduct six developmental, integration, and certification tests, in accordance with OPNAVINST 9410.5, of Over-The-Horizon Targeting and combat systems with tactical data exchanged over COP 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. This includes developmental testing between Joint C2 systems and combat 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.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-3

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 0798 PROJECT TITLE: OTH TARGETING

Exhibit R-3 Cost Analysis													Date: February 2007		
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-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	FY-08 Cost	FY-08 Award Date	FY-09 Cost	FY-09 Award Date	CostToComp	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	3854	389	Various	728	Various	771	Various	739		CONT	CONT	
Interoperability Requirements	Various	Various	3266										3266	
T & E Tools Development	Various	Various	429										429	
Systems Int. & Interop. Testing (LBTN)	Various	Various	2176	399	Various	495	Various	524	Various	502	Various	CONT	CONT	
Interoperability Validation	Various	Various	2158	135	Various	173	Various	182	Various	175	Various	CONT	CONT	
Joint Interoperability	Various	Various	1174										1174	
Testing OTH-T Systems	Various	Various	1702	315	Various	406	Various	431	Various	412	Various	CONT	CONT	
Subtotal T&E			14759	1238		1802		1908		1828		0	CONT	
Remarks														
Contractor Engineering Support													0	
Government Engineering Support	Various	Various	3960	351	Various	196	Various	205	Various	196		CONT	CONT	
Program Management Support	Various	Various	1468										1468	
Travel													0	
Transportation													0	
Subtotal Management			5428	351		196		205		196		0	CONT	
Remarks														
Total Cost			20187	1589		1998		2113		2024		0	CONT	

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
2144 SPACE AND ELECTRONIC WARFARE ENGINEERING	10,821	10,988	6,344	4,330	4,808	6,784	12,505	12,617

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 Architectures 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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Products provided:

1) C4ISR Integrated Architectures

-Integrated Architectures and Standards - Architecture Views (Operational Views, Service Views, Technical Views, System Views)
-Migration Roadmaps to the target Architectures
-Architecture technical studies, interpretation assistance, and white papers

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. Chairman of the Joint Chiefs of Staff Instruction 6260.01B (CJCSINST 6260.01B) directs the USN to provide $1.7 million to the general CWID operating budget and to participate by operating a US Navy demonstration site.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2006	FY 2007	FY 2008	FY 2009
COALITION WARRIOR INTEROPERABILITY DEMONSTRATION (CWID)	2,489	2,778	2,534	2,004

FY 2006 Accomplishments:

Headquarters, US European Command (EUCOM) had been selected as the host COCOM for Coalition Warrior Interoperability Demonstration 2006 (CWID 06). The emphasis was placed on the advanced Coalition interoperability, with CWID continuing to focus on Defense Service to Civilian Authorities (DSCA) and Homeland Defense/Homeland Security (HLD/HLS) as well. The $1.7 million exercise “buy-in” was required by Chairman of the Joint Chiefs of Staff (CJCS) instruction for CWID participation. In addition, $548K supported the US Navy site in San Diego, which funded coalition and US trials based on the annually published Federal Business Opportunity letter posted on 03 May 2005. CWID trials provided the Fleet with three separate evaluations: 1) evaluation was provided by the National Security Agency (NSA) for proper security procedures; 2) evaluation was provided by Joint Integrated Test Command (JITC) for technical issues; and 3) evaluation was provided by the warfighter to verify usability. These evaluations were used to determine whether the projects became programs of record. Over seventy-five technologies were identified, investigated, and interviewed for participation in CWID. Thirty were selected and vetted through three planning conferences, along with having written scenario events to participate in CWID exercises. Twenty of these technologies were selected, demonstrated, and evaluated at the USN CWID site, SPAWARSYSCOM.

FY 2007 Plans:

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 programs of record.

BUDGET
ACTIVITY: 04
PROGRAM
ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

FY 2008 Plans:

CWID will continue to investigate solutions for known capability gaps. While the COCOM executive agent for CWID 2008/2009 has not been identified, it is clear that both Allied Interoperability and HLD/HLS intergovernmental agency interoperability will remain cornerstones of the CWID charter. SPAWARSYSCOM expects to remain the USN site and to continue to host both Coalition and HLD/HLS venues.

FY 2009 Plans:

Host is not yet identified for CWID 09. Continue to investigate Coalition interoperability. A $1.7 million CWID participation fee is required in order to participate in the exercise. An additional $304K is required in order for SPAWARSYSCOM to be an observer for Coalition and HLD/HLS venues.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

	FY 2006	FY 2007	FY 2008	FY 2009
JRAE	1,071	4,207	304	304

FY 2006 Accomplishments:

In 2006, the name “Joint RAPTOR” was changed to Joint Rapid Architecture Experimentation (JRAE). The JRAE efforts were driven by Joint Forces Command (JFCOM) interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM Joint Battle Management Command and Control (JBMC2) effort. JRAE prototyped the “to be” joint integrated architectures and integrated / collaboratively tested with the Army and the Air Force to promote joint interoperability between the services' next generation tactical C4ISR architectures.

Conducted 1 Major JRAE interoperability event which delivered the following:

-JRAE Interoperability Trial Plans
-JRAE Interoperability Data Collection and Analysis
-JRAE Interoperability Metrics
-JRAE Final Reports

FY 2007 Plans:

JRAE efforts will be driven by JFCOM interoperability risk areas at the horizontal (tactical) level as identified by the Joint Architecture efforts under the JFCOM JBMC2. The JRAE process 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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Conduct 2 Major JRAE interoperability events, and deliver the following:

-JRAE Interoperability Trial Plans
-JRAE Interoperability Data Collection and Analysis
-JRAE Interoperability Metrics
-JRAE Final Reports

FY 2008 Plans:

JRAE will continue to leverage previous efforts and will collaborate with the Joint Community and Defense Agencies in identifying interoperability risk areas at the horizontal (tactical) level. JRAE will support the ForceNet Capability Development Process and JFCOM Joint Battle Management Command and Control Process. JRAE efforts will evaluate Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) “to be” architectures and services to support naval missions in the Joint and Coalition net centric environments and interoperability between the Services’ next generation tactical C4ISR architectures.

FY 2009 Plans:

JRAE will continue to leverage previous efforts and will collaborate with the Joint Community and Defense Agencies in identifying interoperability risk areas at the horizontal (tactical) level. JRAE will support the ForceNet Capability Development Process and JFCOM Joint Battle Management Command and Control Process. JRAE efforts will evaluate Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) “to be” architectures and services to support naval missions in the Joint and Coalition net centric environments and interoperability between the Services’ next generation tactical C4ISR architectures.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

	FY 2006	FY 2007	FY 2008	FY 2009
C4ISR REQUIREMENTS ASSESSMENTS	2,175	1,161	2,237	2,022

FY 2006 Accomplishments:

Used Modeling and Simulation tools to support the Naval Capabilities Development Process (NCDP) and Capability Based Assessments (CBAs), per various Joint and OPNAV instructions. Initiated CBA for Battle Space Networking. Performed requirements analysis, collected and developed model architectures for the Campaign Analysis Modeling and Simulation effort.

2014-2020 Model C4ISR architectures for 2 Major Combat Operations / Mission Areas to support specific assessments for 5 POM08 analytic issues in support of the Integrated Strategic Capabilities Plan (ISCP). Specific missions studied included Surface Warfare (SW) and Anti-Submarine Warfare (ASW) of SeaShield. Mission areas were translated into architectural products that were aligned to assessment modeling tools. This work was aligned/integrated with the FORCEnet Implementation Process (FIP) to support the Sponsor Program Proposal (SPP).

Conducted FORCEnet Maritime Headquarters (MHQ) with MOC CBA in support of Department of Defense (DoD) Joint Command and Control (JC2) and National Security Management System (NSMS) directives. Submitted Doctrine, Organization, Training, Materiel, Leadership, and Personnel (DOTMLP) change request package for FORCEnet MHQ for POM 08. Three follow on CBA efforts are planned and detailed for FY 07 and they will expand MHQ with MOC and FORCEnet CBA efforts to National Maritime Domain Awareness (MDA), interagency operations, JC2 and Joint Net centric operations supporting National MDA implementation team (IT) CBA on MDA interagency. Direct support was provided for JFCOM Command and Control (C2) / Net Centric Environment (NCE) CBA.

FY 2007 Plans:

2016-2022 Model C4ISR architectures for 3 Major Combat Operations / Mission areas in support of force level assessments for 5 Navy analytic issues / CBA. Support Network Centric Warfare (NCW) Level 2 block builds. FORCEnet Capability List (FCL) efforts will continue to develop a web-based software system required to implement the FCL. It will provide the direct correlation of FORCEnet Capabilities to activities, functions, and systems mapped to Mission Essential Tasks (METs). It will provide linkages to the metrics assessing value of systems relevance to FORCEnet capability, functions, and associated tasks and activities.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

FY 2008 Plans:

2016-2022 Model C4ISR architectures for 3 Major Combat Operations / Mission areas in support of force level assessments for 5 Navy analytic issues / CBA. Support NCW Level 2 block builds.

FY 2009 Plans:

2020-2026 Model C4ISR architectures for 3 Major Combat Operations / Mission areas in support of force level assessments for 5 Navy analytic issues / CBA. Support NCW Level 3 block builds.

	FY 2006	FY 2007	FY 2008	FY 2009
C4ISR ARCHITECTURE AND STANDARDS	3,560	1,961	537	0

FY 2006 Accomplishments:

Architecture efforts developed a system and technical architecture that supports a migration strategy moving Navy Programs of Record (PORs) from their current platform/stovepipe domain to a future joint net-centric domain. These products provide for the net-centric C4ISR transformation for the next generation of warfare platforms and systems.

-Produced initial systems architecture products for the war-fighting domain derived from the models used to support Naval Capabilities Development Process (NCDP) analysis.
-Completed technical analysis and produced initial Systems Interface Description (SV-1), Systems Communications Description (SV-2) for war fighting domain.
-Completed technical analysis and produced initial System Function Description (SV-4), made significant updates to Navy-wide Common Systems Function List.
-Completed technical analysis and produced initial matrix mapping Operational Activities to Systems Functions (SV-5).
-Published Services Definition Framework for describing the enterprise level service-oriented architecture.
-Completed initial pilot of technical standards profile to support individual program requirements.
-Produced system architecture products in support of specific NCDP analyses.
-Integrated architectural data from the non-warfighting domain; coordinated with Assistant Chief of Naval

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Operations (ACNO), DoN, and SEA WARRIOR.

FORCEnet Enterprise Operational Architecture efforts for the non-warfighting domain include the development, coordination, integration, maintenance and governance of the Operational View for FORCEnet and Marine Headquarters-Global Network (MHQ-GN) / Joint Force Marine Component Commander (JFMCC).

-27 Operational Views (OV) products completed for Fn (11) and MHQ with MOC (16); all posted in Department of Defense Architecture Repository System (DARS).
-JFCOM Cross Service Architecture Integration Working Group support for JFCOM and other Services - Focused efforts on C2 architectures development in support of Quadrennial Defense Review (QDR), JC2, and Enterprise Roadmap (ERM).
-United States Army (USA), United States Air Force (USAF), United States Marine Corps (USMC) and JFCOM operational architecture coordination--initiatives to share and utilize Service architectures for GIG, Navy Expeditionary Combat Command (NECC) and Component Commander Headquarters (HQ).
-Integration of operational architecture development with Sea Shield, Sea Warrior and Sea Basing. Developed a framework for integration of all Naval Power 21 architecture products into a single architecture governance process.

FY 2007 Plans:

The FY07 efforts will build upon completed FY06 efforts and extend the structured data. The effort will develop structured data to define the roadmap for C4ISR capability and facilitate identification of gaps and overlaps in capabilities. The effort will engage with all the Naval Power 21 pillars to collect data required to complete the architectural data set. This effort will also include data integration of functions and activities with Joint capabilities. Services oriented architecture will be formally incorporated into the architectural data set. Technical authority will be established for the architecture and standards.
-Refine FORCEnet Integrated Architecture governance structure to incorporate architecture products and policies from other Naval Power 21 domains including Systems Data Exchange (SV-6) information.
-Refine Maritime Headquarters operational and systems architecture data.
-Conduct technical analysis and produce initial service architecture products for the war-fighting domain.
-Conduct technical analysis and produce Systems Evolution (SV-8) and Systems Technology Forecast (SV-9) data.
-Produce system architecture products as required in support of the Naval Capabilities Development Process (NCDP) analyses.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

FY 2008 Plans:

-Implement technical authority for architecture and standards across Program Executive Office C4I systems.
-Provide architecture data to support required analyses, testing, modeling and simulation.
-Update technical and system data.
-Produce system architecture products as required in support of programming decisions.
-Provide various white papers and studies as needed to develop architecture products.

	FY 2006	FY 2007	FY 2008	FY 2009
END-TO-END SYSTEM ENGINEERING AND INTEGRATED DESIGN	1,526	881	732	0

FY 2006 Accomplishments:

-Provided systems engineering support for PEOs to integrate architecture and roadmap capabilities across warfare areas.
-Supported Team SPAWAR Program Managers in development of JCIDS documents, Integrated Support Plans (ISPs) and NR-KPPs.
-Provided training for Team SPAWAR personnel on how to meet interoperability certification requirements.
-Developed the Composeable Test Environment (CTE) effort with initial emphasis on linking Team SPAWAR labs and facilities.
-Worked with Assistant Secretary of the Navy for Research, Development and Acquisition (ASN RDA) on development and implementation of the Interoperability and Integration Management Plan (I&IMP).

FY 2007 Plans:

-Provide systems engineering support to apply end-to-end integrated architectures across the Naval Enterprise.
-Continue support Team SPAWAR PMs in development of JCIDS documents, ISPs and NR-KPPs.
-Continue providing training for Team SPAWAR personnel on how to meet interoperability certification requirements.
-Continue development of the CTE effort with initial emphasis on linking Team SPAWAR labs and facilities.
-Continue working with ASN RDA on development and implementation of the I&IMP.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

FY 2008 Plans:

-Provide systems engineering support to apply end-to-end integrated architectures across the Naval Enterprise.
-Support Team SPAWAR PMs in development of JCIDS documents, ISPs and NR-KPPs.
-Provide training for Team SPAWAR personnel on how to meet interoperability certification requirements.
-Continue development of the CTE effort with emphasis on linking Team SPAWAR labs and facilities to Naval Enterprise labs and facilities.
-Work with ASN RDA on implementation of the I&IMP.

C. OTHER PROGRAM FUNDING SUMMARY:
Not applicable.

D. ACQUISITION STRATEGY:
Not applicable.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-3

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Exhibit R-3 Cost Analysis (page 1)												Date: February 2007		
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-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	FY-08 Cost	FY-08 Award Date	FY-09 Cost	FY-09 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	8210	2175	Various	1161	Various	2237	Various	2022	Various	CONT	CONT	
C4ISR Architecture and Standards	Various	Various	7656	3560	Various	1961	Various	537	Various	0	Various	CONT	CONT	
End-to-End System Engineering and Integrated Design	Various	Various	7749	1526	Various	881	Various	732	Various	0	Various	CONT	CONT	
Info. Repository/Naval Architecture	Various	Various	4000										4000	
Navy Collaborative	Various	Various												
Subtotal Support			58342	7261		4003		3506		2022			CONT	
Remarks														

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-3

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2144 PROJECT TITLE: SPACE AND ELECTRONIC WARFARE ENGINEERING

Exhibit R-3 Cost Analysis (page 2)												Date: February 2007		
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-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	FY-08 Cost	FY-08 Award Date	FY-09 Cost	FY-09 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
SEW Eng/CWID	Various	Various	19194	2489	Various	2778	Various	2534		2004	Various	CONT	CONT	CONT
SEW Eng/JRAE	Various	Various	12492	1071	Various	4207	Various	304		304	Various	CONT	CONT	CONT
Subtotal T&E			31686	3560		6985		2838		2308			CONT	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			90028	10821		10988		6344		4330			CONT	

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007
Exhibit R-2a

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
2357 MARITIME BATTLE CENTER	23,180	30,690	33,838	32,667	42,722	50,364	51,317	52,299

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the Maritime Battle Center (MBC) is to execute the Naval Warfare Innovation Process. MBC and SEA TRIAL experimentation programs integrate and validate emerging Navy Concept of Operations (CONOPS), Doctrine and technologies through experiments/analysis/modeling and simulation to support warfighting capability development. SEA TRIAL experimentation is dedicated to providing solutions to near term (within the Fiscal Year Defense Plan) warfighting gaps through focused Operational Agent (Commander Second Fleet, Commander Third Fleet and Commander Naval Network Warfare Command) led experimentation. The US Fleet Forces Command (USFFC) chaired Flag level SEA TRIAL Executive Steering Group (STESG) prioritizes and approves proposed experiments annually using the long range Concept Development and Experimentation (CD&E) plan as an overall experimentation guide to resolve warfighting gaps. The approved, prioritized experiments are codified in the SEA TRIAL Execution Plan (ExPlan).

The Navy Warfare Development Command (NWDC) acts as the executive agent to conduct and coordinate preliminary experiments and technology demonstrations focused on the advanced engineering and operational system development of systems related to all warfare areas. The MBC uses a network centric environment that links to the existing “core” Naval facilities at 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 warfare CONOPS through limited objective experimentation, analysis and modeling and simulations in conjunction with 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 and 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.

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

This program historically does not meet established execution benchmarks. MBC experimentation differs from other programs because it is based on Fleet operational availability vice independently scheduled through warfighting labs. Because Fleet experimentation frequently must occur during the spring/summer operational schedules, the overall RDT&E obligation/expenditure rates do not align with OSD practice.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2006	FY 2007	FY 2008	FY 2009
FBE ANALYSIS AND CORE SUPPORT	23,180	30,690	33,838	32,667

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 2006 Accomplishments:

•Continued participation in JFCOM experimentation continuum
•Continued Limited Objective Experiments
•Continued CONOPS Development Experiments
•Initiated and executed Sea Trial Experiments, War Games, and Seminars
•Completed Maritime Dynamic Targeting Cell Experiment
•Completed Distributed Staff Capability Experiment
•Completed Undersea Warfare Decision Support System Experiment
•Completed Command and Control Maritime Domain Awareness Experiment
•Completed ISR-High Altitude/Long Endurance Experiment
•Completed Airborne IP Networks Experiment
•Completed Digital Time Sensitive Strike Experiment
•Completed Littoral Combat Ship ASW Multi-Static Experiment

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

•Completed Unmanned Aerial Vehicle for Expeditionary Strike Group Experiment
•Completed Network/Comms Experiment
•Completed SSGN/SOF CONOPS & Full Range Connectivity Experiment
•Completed Intermediate Transfer Station Experiment
•Completed Automated Identification System Experiment
•Completed Tactical Tomohawk Experiment
•Completed MCM Modular Mission Packages Experiment
•Completed Distributed Imagery Processing Experiment
•Completed Coalition/Cross Domain Solution Experiment
•Completed Tactical UAV Maritime Employment Experiment
•Completed TAPA IO Anti Ship Missile Experiment
•Completed JEFX 06 Global Hawk Experiment
•Completed Valiant Shield 06 Experiment
•Completed Naval Obscurant Experiment
•Completed Next Generation Navy SATCOM Experiment

FY 2007 Plans:

•Continue participation in JFCOM experimentation continuum
•Continue Limited Objective Experiments
•Continue CONOPS Development Experiments
•Initiate and execute Sea Trial Experiments, War Games, and Seminars
•Initiate and complete Receive While Transmit Experiment
•Initiate and complete Maritime Domain Awareness Experiment
•Initiate and complete Maritime and Joint Fires Experiment
•Initiate and complete Networking of Military Operations Center Experiment
•Initiate and complete METOPS, IO and Space Support Experiment
•Initiate and complete Coalition Networks Experiment
•Initiate and complete Surface Ship Periscope Detection Experiment
•Initiate and complete Fusion/Correlation Experiment
•Initiate and complete NCES/SOA Experiment
•Initiate and complete Sensor Integration Experiment
•Initiate and complete JFMCC Fires/MDT Experiment

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

•Initiate and complete LAMP Experiment
•Initiate and complete Long Endurance Surveillance Experiment
•Initiate and complete Tactical IP Networks Experiment
•Initiate and complete C2/Collaboration Experiment
•Initiate and complete Cross Domain Solution Experiment
•Initiate and complete IA/Computer Network Defense Experiment
•Initiate and complete Comms at Speed and Depth Experiment
•Initiate and complete Hull Survey Remotely Operating Vehicle Experiment
•Initiate and complete LCS MIW Mission Modules Experiment
•Initiate and complete Tactical Tomahawk Experiment
•Initiate and complete Naval Obscurant Experiment
•Initiate and complete Deployable Airbeam Fendering System Experiment
•Initiate and complete Offensive IO Experiment
•Initiate and complete Counter Maritime IED Experiment
•Initiate and complete SSGN/SOF CONOPS
•Initiate and complete Enterprise Afloat WAN Experiment
•Initiate and complete Bandwidth Optimization Experiment

FY 2008 Plans:

•Continue participation in JFCOM experimentation continuum
•Continue Limited Objective Experiments
•Continue CONOPS Development Experiments
•Initiate and execute Sea Trial Experiments, War Games, and Seminars

FY 2009 Plans:

•Continue participation in JFCOM experimentation continuum
•Continue Limited Objective Experiments
•Continue CONOPS Development Experiments
•Initiate and execute Sea Trial Experiments, War Games, and Seminars

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

C. OTHER PROGRAM FUNDING SUMMARY:
Not applicable.

D. ACQUISITION STRATEGY:
Not applicable.

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2007

Exhibit R-3

BUDGET ACTIVITY: 04
PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SPACE & ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT
PROJECT NUMBER: 2357 PROJECT TITLE: MARITIME BATTLE CENTER

Exhibit R-3 Cost Analysis												Date: February 2007		
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-06 Cost	FY-06 Award Date	FY-07 Cost	FY-07 Award Date	FY-08 Cost	FY-08 Award Date	FY-09 Cost	FY-09 Award Date	Cost To Comp.	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	126798	18776	Various	26087	Various	28763	Various	27767	Various	CONT	CONT	CONT
Subtotal T&E			126798	18776		26087		28763		27767		CONT	CONT	CONT
Remarks														
Program Management	Various	Various	27692	4404	Various	4603	Various	5075	Various	4900	Various	CONT	CONT	CONT
Subtotal Management			27692	4404		4603		5075		4900		CONT	CONT	CONT
Remarks														
Total Cost			154490	23180		30690		33838		32667		CONT	CONT	CONT

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0604787N - Joint Warfare Transformation Programs			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**22.406**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
3021 - Joint Warfare Transformation Program	**22.406**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Quantity of RDT&E Articles								

In accordance with the FY 2005 National Defense Authorization Act, RDT&E funding for Joint Forces Command transfers from Navy to Defense-Wide beginning in FY 2007. The program is changed from 0604787N, BA 4 to 0604787D 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 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0604787N - Joint Warfare Transformation Programs	3021 - Joint Warfare Transformation Program

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 07 President's Budget	23.032	0.000	0.000	0.000
FY 08/09 President's Budget Submit	22.406	0.000	0.000	0.000
Total Adjustments	-0.626	0.000	0.000	0.000
Summary of Adjustments				
Miscellaneous Navy Adjustments	-0.626			
Subtotal	-0.626	0.000	0.000	0.000

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2007
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0604787N - Joint Warfare Transformation Programs	3021 - Joint Warfare Transformation Program	

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Interoperability Technology Demonstration Center (ITDC)	13.456			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
Continued 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 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 will lead to early identification of interoperability issues and allow for earlier fielding of interoperable joint capabilities.

	FY 06	FY 07	FY 08	FY 09
Advanced Systems Prototyping	3.034			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
Continued 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 06	FY 07	FY 08	FY 09
CCs Requirements Analysis and Capability Assessments	3.016			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
Continued 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. Joint Systems Integration Command (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 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0604787N - Joint Warfare Transformation Programs	3021 - Joint Warfare Transformation Program

(U) B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
DOTMLP-F Transformation Change Package (TCP) Recommendations	0.553			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
Continued 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.

	FY 06	FY 07	FY 08	FY 09
Joint Concept Development and Experimentation Support	0.554			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
Continued to provide 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.

	FY 06	FY 07	FY 08	FY 09
Federated Joint C2 Laboratories (FJC2L)	1.793			
RDT&E Articles Quantity				

FY06 ACCOMPLISHMENTS:
The Federated Joint C2 Laboratories (FJC2L) is a voluntary consortium of the Joint Systems Integration Command (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. JSIC, as the overseer of the consortium, continued to provide annual support to these efforts through project experimentation, prototyping, and assessment for joint solutions.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0604787N - Joint Warfare Transformation Programs	3021 - Joint Warfare Transformation Program	

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006
Not Applicable	

(U) E. ACQUISITION STRATEGY:

(U) F. MAJOR PERFORMERS:

(U) G. PERFORMANCE METRICS:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-7**

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 PYs Cost	FY07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Dev Support Equip Acquisition	MIPR	General Service Administration	3.515						Continuing	Continuing	Continuing	0.000
Systems Engineering	C-CPFF	Old Dominion University	0.094						Continuing	Continuing	Continuing	0.000
Contractor Engineering Support	C-CPFF	Georgia Tech Research Institut	0.788						Continuing	Continuing	Continuing	0.000
Gov't Engineering Support	C-CPFF	General Dynamics	3.195						Continuing	Continuing	Continuing	0.000
Systems Engineering	C-CPFF	South Carolina Research	0.361						Continuing	Continuing	Continuing	0.000
Gov't Engineering Support	MIPR	Various DoD	0.673						Continuing	Continuing	Continuing	0.000
Travel		Various DoD	0.046						Continuing	Continuing	Continuing	0.000
Subtotal Product Development			8.672	0.000		0.000		0.000	Continuing	Continuing	Continuing	0.000

Remarks:

Systems Engineering Support	C-CPFF	Old Dominion University	0.079								0.079	0.000
Contractor Engineering Support	C-CPFF	General Dynamics	3.295								3.295	0.000
Gov't Engineering Support	MIPR	Various DoD	1.317								1.317	0.000
Travel		Various DoD	0.035								0.035	0.000
											0.000	0.000
											0.000	0.000
											0.000	0.000
Subtotal Support			4.726	0.000		0.000		0.000		0.000	4.726	0.000

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-7**

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 PYs Cost	FY07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Dev Support Equip Acquisition	MIPR	General Service Administration	3.091							Continuing	Continuing	0.000
Systems Engineering	C-CPFF	Old Dominion University	0.109							Continuing	Continuing	0.000
Contractor Engineering Support	C-CPFF	General Dynamics	3.647							Continuing	Continuing	0.000
Systems Engineering	C-CPFF	South Carolina Research	0.616							Continuing	Continuing	0.000
Gov't Engineering Support	MIPR	Various DoD	1.436							Continuing	Continuing	0.000
Travel		Various DoD	0.109									0.000
Subtotal T&E			9.008	0.000		0.000		0.000		Continuing	Continuing	0.000
Remarks:												
Contractor Engineering Support											0.000	0.000
Government Engineering Support											0.000	0.000
Program Management Support											0.000	0.000
Travel											0.000	0.000
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	0.000
Remarks:												
Total Cost			22.406	0.000		0.000		0.000		Continuing	Continuing	0.000
Remarks:												

Exhibit R-3, Project Cost Analysis

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																																	DATE: **February 2007**
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										
Fiscal Year	FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011				FY 2012				FY 2013			
	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	NO TITLE 10 ACQUISITION AUTHORITY / FORM NOT APPLICABLE																															
Prototype Phase																																
System Development (e.g., Radar System dev.)																																
Equipment Delivery (e.g., EDM Radar Delivery)																																
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones LRIP I LRIPII FRP																																
Deliveries																																

CLASSIFICATION:

Exhibit R-4a, Schedule Profile					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0604787N - Joint Warfare Transformation Programs				PROJECT NUMBER AND NAME 3021 - Joint Warfare Transformation Program			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY2013
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	NO TITLE 10 ACQUISITION AUTHORITY / FORM NOT APPLICABLE							
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								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								