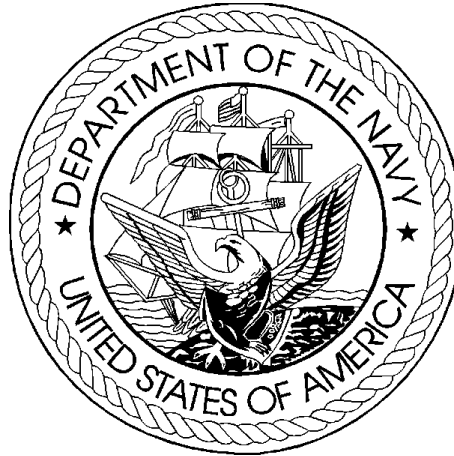


DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2003
BUDGET ESTIMATES



JUSTIFICATION OF ESTIMATES
FEBRUARY 2002

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

UNCLASSIFIED

Department of the Navy
FY 2001 RDT&E Program

Exhibit R-1

APPROPRIATION: 1319n Research, Development, Test and Evaluation, Navy

DATE: February 2002

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Thousands of Dollars			Security Classification
				FY 2001	FY 2002	FY 2003	
43	0603207N	Air/Ocean Tactical Application	4	31.420	32.047	32.549	U
45	0603237N	Deployable Joint Command and Control	4	0.000	0.000	39.772	U
46	0603254N	ASW SYSTEMS DEVELOPMENT	4	27.042	14.790	13.207	U
47	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	4	2.334	1.934	1.922	U
48	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	4	6.600	3.427	3.350	U
49	0603502N	Surface & Shallow Water Mine Countermeasures	4	103.114	140.115	155.016	U
50	0603506N	SURFACE SHIP TORPEDO DEFENSE	4	15.514	18.552	3.244	U
51	0603512N	Carrier Systems Development	4	143.951	162.635	88.913	U
52	0603513N	SHIPBOARD SYSTEM COMPONENT DEVELOPMEN	4	246.032	295.135	243.111	U
55	0603542N	Radiological Control	4	0.566	1.047	1.078	U
56	0603553N	Surface ASW	4	7.203	3.691	3.219	U
57	0603559N	SSGN Design	4	35.798	74.337	82.527	U
58	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	4	128.391	124.142	107.389	U
59	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	4	4.172	9.323	11.601	U
60	0603563N	Ship Concept Advanced Design	4	5.031	20.665	5.820	U
61	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDI	4	54.449	14.748	2.983	U
62	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	4	166.758	171.546	216.091	U
63	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	4	9.226	3.886	2.931	U
64	0603576N	CHALK EAGLE	4	58.379	34.960	20.978	U
65	0603582N	Combat System Integration	4	57.211	61.368	40.464	U
66	0603609N	CONVENTIONAL MUNITIONS	4	31.100	24.561	22.445	U
67	0603611M	MARINE CORPS ASSAULT VEHICLES	4	142.520	260.627	272.092	U
68	0603612M	MC Mine Countermeasures	4	0.000	0.000	0.497	U
69	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYS	4	32.755	39.894	27.777	U
70	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOF	4	13.994	12.803	12.877	U
71	0603658N	COOPERATIVE ENGAGEMENT	4	173.321	105.689	86.144	U
72	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMI	4	14.591	15.935	15.257	U
73	0603721N	Environmental Protection	4	71.486	47.692	44.206	U
74	0603724N	NAVY ENERGY PROGRAM	4	7.311	6.963	5.060	U
75	0603725N	Facilities Improvement	4	1.807	1.713	2.124	U
76	0603734N	CHALK CORAL	4	47.512	47.761	50.704	U
77	0603739N	Navy Logistic Productivity	4	14.500	31.653	13.023	U
78	0603746N	RETRACT MAPLE	4	124.604	155.356	212.506	U
81	0603755N	SHIP SELF DEFENSE - DEM/VAL	4	6.232	9.270	5.930	U
82	0603764N	LINK EVERGREEN	4	9.646	25.890	55.971	U
83	0603787N	Special Processes	4	59.709	65.078	39.756	U
84	0603790N	NATO Research and Development	4	8.620	11.449	11.581	U
85	0603795N	LAND ATTACK TECHNOLOGY	4	140.357	149.063	108.693	U
86	0603800N	JOINT STRIKE FIGHTER (JSF) - DEM/VAL	4	341.164	0.000	0.000	U
87	0603851M	NONLETHAL WEAPONS - DEM/VAL	4	28.115	35.095	24.082	U
88	0603857N	JWE - BATTLE LAB	4	12.654	13.410	14.414	U
89	0603860N	JPALS	4	0.000	1.500	11.932	U
90	0603879N	Single Int. Air Picture (SIAP) Sys Eng	4	3.496	42.727	73.966	U
91	0603889N	COUNTERDRUG RDT&E PROJECTS	4	21.468	0.000	0.000	U
92	0604707N	SEW Architecture/Eng Support	4	37.513	39.273	31.623	U
Total Demonstration and Validation (Dem/Val)				2632.8150	2577.8040	2432.2390	

UNCLASSIFIED

Department of the Navy
FY 2001 RDT&E Program
Alphabetic Listing

Exhibit R-1

APPROPRIATION: 1319n Research, Development, Test and Evaluation, Navy

DATE: February 2002

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Thousands of Dollars			Security Classification
				FY 2001	FY 2002	FY 2003	
48	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	4	6.600	3.427	3.350	U
62	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	4	166.758	171.546	216.091	U
58	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	4	128.391	124.142	107.389	U
63	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	4	9.226	3.886	2.931	U
43	0603207N	Air/Ocean Tactical Application	4	31.420	32.047	32.549	U
46	0603254N	ASW SYSTEMS DEVELOPMENT	4	27.042	14.790	13.207	U
44	0603216N	Aviation Survivability	4	7.346	13.703	7.486	U
51	0603512N	Carrier Systems Development	4	143.951	162.635	88.913	U
76	0603734N	CHALK CORAL	4	47.512	47.761	50.704	U
64	0603576N	CHALK EAGLE	4	58.379	34.960	20.978	U
65	0603582N	Combat System Integration	4	57.211	61.368	40.464	U
66	0603609N	CONVENTIONAL MUNITIONS	4	31.100	24.561	22.445	U
71	0603658N	COOPERATIVE ENGAGEMENT	4	173.321	105.689	86.144	U
91	0603889N	COUNTERDRUG RDT&E PROJECTS	4	21.468	0.000	0.000	U
45	0603237N	Deployable Joint Command and Control	4	0.000	0.000	39.772	U
73	0603721N	Environmental Protection	4	71.486	47.692	44.206	U
75	0603725N	Facilities Improvement	4	1.807	1.713	2.124	U
70	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOP	4	13.994	12.803	12.877	U
86	0603800N	JOINT STRIKE FIGHTER (JSF) - DEM/VAL	4	341.164	0.000	0.000	U
89	0603860N	JPALS	4	0.000	1.500	11.932	U
88	0603857N	JWE - BATTLE LAB	4	12.654	13.410	14.414	U
85	0603795N	LAND ATTACK TECHNOLOGY	4	140.357	149.063	108.693	U
82	0603764N	LINK EVERGREEN	4	9.646	25.890	55.971	U
79	0603748N	LINK PLUMERIA	4	45.604	62.048	82.909	U
67	0603611M	MARINE CORPS ASSAULT VEHICLES	4	142.520	260.627	272.092	U
69	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYS	4	32.755	39.894	27.777	U
68	0603612M	MC Mine Countermeasures	4	0.000	0.000	0.497	U
84	0603790N	NATO Research and Development	4	8.620	11.449	11.581	U
74	0603724N	NAVY ENERGY PROGRAM	4	7.311	6.963	5.060	U
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87	0603851M	NONLETHAL WEAPONS - DEM/VAL	4	28.115	35.095	24.082	U
72	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMI	4	14.591	15.935	15.257	U
53	0603525N	PILOT FISH	4	103.604	98.304	72.637	U
55	0603542N	Radiological Control	4	0.566	1.047	1.078	U
80	0603751N	RETRACT ELM	4	16.925	22.004	21.900	U
54	0603527N	RETRACT LARCH	4	11.670	49.995	28.482	U
78	0603746N	RETRACT MAPLE	4	124.604	155.356	212.506	U
92	0604707N	SEW Architecture/Eng Support	4	37.513	39.273	31.623	U
60	0603563N	Ship Concept Advanced Design	4	5.031	20.665	5.820	U
61	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDI	4	54.449	14.748	2.983	U
81	0603755N	SHIP SELF DEFENSE - DEM/VAL	4	6.232	9.270	5.930	U
52	0603513N	SHIPBOARD SYSTEM COMPONENT DEVELOPMEN	4	246.032	295.135	243.111	U
90	0603879N	Single Int. Air Picture (SIAP) Sys Eng	4	3.496	42.727	73.966	U
83	0603787N	Special Processes	4	59.709	65.078	39.756	U
57	0603559N	SSGN Design	4	35.798	74.337	82.527	U
59	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	4	4.172	9.323	11.601	U
49	0603502N	Surface & Shallow Water Mine Countermeasures	4	103.114	140.115	155.016	U
56	0603553N	Surface ASW	4	7.203	3.691	3.219	U
50	0603506N	SURFACE SHIP TORPEDO DEFENSE	4	15.514	18.552	3.244	U
47	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	4	2.334	1.934	1.922	U
Total Demonstration and Validation (Dem/Val)				2632.815	2577.804	2432.239	

**Fiscal Year 2003 Budget Estimates
Budget Appendix Extract Language**

**RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY
(RDTEN)**

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, [\$11,498,506,000] \$12,501,630,000, to remain available for obligation until September 30, [2003] 2004: *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. (10 U.S.C. 174, 2352-54, 7522; Department of Defense Appropriations Act, 2002; additional authorizing legislation required.)*

UNCLASSIFIED

EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	To Complete	Total Program
X2341 METOC Data Acquisition	8,341	9,099	10,050	10,371	10,547	10,766	11,005	CONT.	CONT.
X2342 METOC Data Assimilation and Modeling	14,287	13,471	12,768	13,032	13,354	13,618	13,924	CONT.	CONT.
X2343 Tactical METOC Applications	7,372	7,985	8,255	8,527	8,679	8,849	9,049	CONT.	CONT.
X2344 Precise Timing and Astrometry	1,420	1,492	1,476	1,508	1,541	1,574	1,609	CONT.	CONT.
TOTAL	31,420	32,047	32,549	33,438	34,121	34,807	35,587	CONT.	CONT.

R-1 Shopping List - Item No 43 (1) of 43 (27)

Exhibit R-2, RDT&E Budget Item Justification

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Air Ocean Tactical Applications (AOTA) Program Element is specifically tailored to emphasize techniques which expand knowledge and improve understanding of the meteorological and oceanographic (METOC) environment and its impact on combat systems performance. AOTA focuses on shallow water and other harsh environments, and regional conflict and crisis response scenarios. Projects in this program element develop atmospheric and oceanographic data assimilation techniques, forecast models, data base management systems and associated software for use in both mainframe and tactical scale 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 remotely sensed satellite data for integration into other systems and tactical applications. In addition, the projects provide for demonstration and validation of specialized METOC instrumentation and measurement techniques, new sensors, communications and interfaces. Included are techniques to assess, predict and enhance the performance of current and proposed undersea surveillance, tactical and mine warfare and weapons systems. AOTA METOC products are tailored for, and will be incorporated into the Global Command and Control System/Maritime (GCCS/M) and/or onboard combat systems to provide accurate operational system performance predictions. These METOC products will also be incorporated into fleet trainers to provide realistic environments in support of warfare simulations. Finally, this project upgrades the accuracy of the U.S. Naval Observatory's Master Clock system; 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.

(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.

R-1 Shopping List - Item No 43 (2) of 43 (27)

Exhibit R-2, RDT&E Budget Item Justification

UNCLASSIFIED

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2341

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: METOC Data Acquisition

PROJECT NUMBER & Title	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	To Complete	Total Program
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X2341 METOC Data Acquisition

8,341	9,099	10,050	10,371	10,547	10,766	11,005	CONT.	CONT.
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A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The major thrust of the meteorology and oceanography (METOC) Data Acquisition Project is 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. As the emphasis on Naval Warfare has evolved from blue water operations to the littoral and hinterland battlespace, METOC data requirements have likewise evolved. The littoral and hinterland 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 parameters is more crucial than ever in planning and executing Amphibious Warfare, Mine Warfare, Special Operations, Anti-Submarine Warfare, and Strike Warfare operations. Routinely available data sources, such as climatology, oceanographic and meteorological numerical models, and satellite remote sensing are inadequate to support these warfare areas in the littoral and hinterland regions. Current operational sensors, such as the standard balloon launched radiosonde, are deployed from platforms that are frequently located great distances from the 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 300 ship year shortfall in coastal hydrographic survey requirements; and, 7) develop an expanded database for predictive METOC models in areas of potential interest.

R-1 Shopping List - Item No 43 (3) of 43 (27)

Exhibit R-2a, RDT&E,N PROJECT JUSTIFICATION (X2341)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT NUMBER: X2341

PROJECT TITLE: METOC Data
Acquisition

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$1,275) Completed sensor developments for ROV/AUV, and continued sensor integration and development of UAV sensors in Tier II Plus Vehicles.
- (U) (\$1,175) Continued assessments of temporal and spatial variability of littoral environments for acoustic data inversion.
- (U) (\$1,305) Continued development of advanced techniques to acquire and manage ambient noise data.
- (U) (\$1,180) Completed development of next-generation sensors for MEASURE, MORIAH and aerosol measurements.
- (U) (\$1,170) Completed development of data connectivity with the next generation Tomahawk mission planning system. Continued development of data connectivity with the next generation Tactical Air Mission Planning System (TAMPS 7.0) and GCCS/M.
- (U) (\$1,286) Began development of next-generation acoustic data acquisition techniques
- (U) (\$950) Continued information management and DMAP functions.

2. (U) FY 2002 PLAN:

- (U) (\$1,075) Complete sensor integration and development of UAV sensors in Tier II Plus Vehicles. Begin development of sensor suite for Tier III Vehicles.
- (U) (\$1,425) Continue assessments of temporal and spatial variability of littoral environments for acoustic data inversion.

R-1 Shopping List - Item No 43 (4) of 43 (27)

Exhibit R-2a, RDT&E,N PROJECT JUSTIFICATION (X2341)

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2341

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: METOC Data
Acquisition

- (U) (\$1,265) Continue development of advanced techniques to acquire and manage ambient noise data.
- (U) (\$1,068) Begin development of autonomous clandestine sensors for measurements in denied areas.
- (U) (\$1,280) Complete development of data connectivity with the next generation Tactical Air Mission Planning System (TAMPS 7.0) and GCCS/M. Begin development of data connectivity with Joint C4ISR.
- (U) (\$1,966) Continue development of next-generation acoustic data acquisition techniques.
- (U) (\$1,020) Continue information management and DMAP functions.

3. (U) FY 2003 PLAN:

- (U) (\$1,230) Continue development of sensor suite for Tier III Vehicles.
- (U) (\$1,590) Continue assessments of temporal and spatial variability of littoral environments for acoustic data inversion.
- (U) (\$1,340) Continue development of advanced techniques to acquire and manage ambient noise data.
- (U) (\$1,292) Continue development of autonomous clandestine sensors for measurements in denied areas.
- (U) (\$1,320) Continue development of data connectivity with Joint C4ISR.
- (U) (\$2,128) Complete development of next-generation acoustic data acquisition techniques. Begin development of advanced technology through the sensor data acquisition techniques.
- (U) (\$1,150) Continue information management and DMAP functions.

R-1 Shopping List - Item No 43 (5) of 43 (27)

Exhibit R-2a, RDT&E,N PROJECT JUSTIFICATION (X2341)

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2341

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: METOC Data
Acquisition

B. (U) PROGRAM CHANGE SUMMARY:

(U) Funding: FY2001 adjustments are due to Section 8086 .7% Pro-rata Reduction (-61), .22% Government Wide Rescission P.L. 106-554, Sec. 1403 (-19), FY01 SBIR Assessment Apr-27-01 (-180) and Miscellaneous Navy Adjustments (-155). FY2002 adjustments are due to Section 8123: Management Reform Initiative (-81).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

(U) RELATED RDT&E: PE 0604218N, Air/Ocean Equipment Engineering - AN/SMQ-11 satellite receiver/recorder system engineering to receive data from DMSP onboard selected ships and shore sites.

(U) ACQUISITION STRATEGY: Not applicable

R-1 Shopping List - Item No 43 (6) of 43 (27)

Exhibit R-2a, RDT&E,N PROJECT JUSTIFICATION (X2341)

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3 Project Cost Analysis (page 1)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0603207N				PROJECT NAME AND NUMBER: X2341 METOC DATA ACQUISITION				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WX	NRL	6,429	4,554	N/A	3,230	N/A	4,360	N/A	CONT	CONT	
	WX	NAWC-AD Lake	778	145	N/A	0	N/A	152	N/A	CONT	CONT	
	CP	ARL/APL	3,000	375	N/A	411	N/A	391	N/A	CONT	CONT	
	WX	NSWC	0	1,227	N/A	565	N/A	1,277	N/A	CONT	CONT	
	N/A	MISC	4,058	1,605	N/A	3,765	N/A	3,714	N/A	CONT	CONT	
	WX	FNMOC		285		998	N/A					
Subtotal Product Development			14,265	8,191	NA	8,969	NA	9,894	N/A	CONT	CONT	
Remarks:												
Support	CP	SSA	1,065	150	N/A	130	N/A	156	N/A	CONT	CONT	
Subtotal Support			1,065	150	N/A	130	N/A	156	N/A	CONT	CONT	
Remarks												

R-1 Shopping List - Item No 43 (7) of 43 (27)

Exhibit R-3, Project Cost Analysis

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3 Project Cost Analysis (page 2)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0603207N				PROJECT NAME AND NUMBER: X2341 METOC DATA ACQUISITION				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remark												
Total Cost			15,330	8,341	N/A	9,099	N/A	10,050	N/A	CONT	CONT	
Remarks												

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2342
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: METOC Data Assimilation and Modeling

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	To Complete	Total Program
X2342 METOC Data Assimilation and Modeling.									
	14,287	13,471	12,768	13,032	13,354	13,618	13,924	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The meteorological and oceanographic (METOC) Data Assimilation Project 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. Included are numerical oceanographic and atmospheric models for the Large Scale Computers at the Navy Fleet Numerical Meteorology and Oceanography Center, Monterey, CA and the Naval Oceanographic Office, Stennis Space Center, MS. These models, combined with a global communications network for data acquisition and distribution, form a prediction system which provides METOC data and products necessary to support naval operations worldwide in virtually every mission area; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder. These techniques allow for the integration and tactical application of significant oceanographic and atmospheric data derived from satellite-borne sensors. Included are techniques and algorithms for the processing of sensor measurements, conversion of raw signal data to geophysical information, analysis schemes encompassing Artificial Intelligence and Expert Systems, and other satellite data applications and field validation of end products; and, 4) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products. As weapons and sensors become more sophisticated and complex, the marine environment has an increasingly significant impact on system performance. Operational limitations induced by the ocean and atmosphere must be understood, and the resulting constraints on mission effectiveness and system employment minimized. Hence, the operating forces require more accurate worldwide forecasts of METOC conditions with increased temporal and spatial resolution. An additional challenge is posed by the emergence of new satellite sensors, which are continually adding new sources of disparate data types. In order to fully exploit this dynamic and massive volume of data, modern data base management systems (DBMS) are required, and must be tailored for individual computer configurations. Improved representation of smaller-scale phenomena, particularly in the littoral, is also an important consideration.

R-1 Shopping List - Item No 43 (9) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4	PROGRAM ELEMENT: 0603207N	PROJECT NUMBER: X2342
	PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications	PROJECT TITLE: METOC Data Assimilation and Modeling

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$1,474) Continued modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
- (U) (\$1,070) Completed developments of techniques for coupled air/ocean data assimilation. Began development of variational techniques for coupled assimilation.
- (U) (\$579) Participated in selected fleet exercises and demonstrations.
- (U) (\$1,253) Continued development of next generation high resolution coupled air/ocean forecast models.
- (U) (\$1,250) Continued development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
- (U) (\$1,165) Completed development of capabilities to assimilate and quality control METOC data from satellite sensors and conventional data sources using 4D variational techniques.
- (U) (\$1,150) Continued development of techniques for bathymetry and surf zone and high resolution micro-topography algorithms and automated objective processing in the littoral.
- (U) (\$1,185) Continued development of shipboard shallow water ocean circulation model, next generation tide and surf models, and automated graphical applications for tactical data visualization.
- (U) (\$1,026) Began development of next-generation active and passive acoustic models.
- (U) (\$1,025) Continued the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.

R-1 Shopping List - Item No 43 (10) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2342

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: METOC Data Assimilation
and Modeling

- (U) (\$915) Continued the verification and validation of products and data assimilation techniques developed for fleet applications.
- (U) (\$2,195) Completed a one-year effort to develop improved hydrographic data collection, data processing, and production techniques based on a Congressional add to establish the National Center of Excellence in Hydrography at the University of Southern Mississippi. There is no outyear funding identified to continue this effort.

2. (U) FY 2002 PLAN:

- (U) (\$1,312) Continue modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
- (U) (\$1,275) Continue development of variational techniques for coupled assimilation.
- (U) (\$635) Participate in selected fleet exercises and demonstrations.
- (U) (\$1,690) Continue development of next generation high resolution coupled air/ocean forecast models.
- (U) (\$1,504) Continue development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
- (U) (\$1,105) Begin development of new capabilities to assimilate and quality control METOC data from satellite sensors and conventional data sources using Artificial Intelligence techniques.
- (U) (\$1,500) Continue development of techniques for bathymetry and surf zone and high resolution micro-topography algorithms and automated objective processing in the littoral.
- (U) (\$1,225) Complete development of shipboard shallow water ocean circulation model, next generation tide and surf models, and automated graphical applications for tactical data visualization.
- (U) (\$1,185) Continue development of next-generation active and passive acoustic models.

R-1 Shopping List - Item No 43 (11) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2342
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: METOC Data Assimilation
and Modeling

- (U) (\$1,035) Continue the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.
- (U) (\$1,005) Continue the verification and validation of products and data assimilation techniques developed for fleet applications.

3. (U) FY 2003 PLAN:

- (U) (\$1,360) Continue modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
- (U) (\$1,280) Continue development of variational techniques for coupled assimilation.
- (U) (\$650) Participate in selected fleet exercises and demonstrations.
- (U) (\$1,446) Continue development of next generation high resolution coupled air/ocean forecast models.
- (U) (\$1,652) Continue development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
- (U) (\$1,120) Continue development of new capabilities to assimilate and quality control METOC data from satellite sensors and conventional data sources using Artificial Intelligence techniques.
- (U) (\$1,540) Continue development of techniques for bathymetry and surf zone and high resolution micro-topography algorithms and automated objective processing in the littoral.
- (U) (\$1,260) Continue development of next-generation active and passive acoustic models.
- (U) (\$1,245) Continue the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.

R-1 Shopping List - Item No 43 (12) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2342

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: METOC Data Assimilation
and Modeling

- (U) (\$1,215) Continue the verification and validation of products and data assimilation techniques developed for fleet applications.

R-1 Shopping List - Item No 43 (13) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

UNCLASSIFIED

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4	PROGRAM ELEMENT: 0603207N	PROJECT NUMBER: X2342
	PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications	PROJECT TITLE: METOC Data Assimilation and Modeling

B. (U) PROGRAM CHANGE SUMMARY:

(U) Funding: FY 2001 adjustments are due to Section 8086 .7% Pro-rata Reduction (-104), Section 66744 National Center of Excellence in Hydrography Congressional Add (2,500), Government Wide Rescission .22% P.L. 106-554, Sec 1403 (-32), FY01 SBIR Assessment Apr-27-01 (-154) and Miscellaneous Navy Adjustments (-218). FY2002 adjustments are due to Section 8123: Management Reform Initiative (-120).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

D. (U) ACQ7UISITION STRATEGY: Not applicable.

R-1 Shopping List - Item No 43 (14) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2342)

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Exhibit R-3 Project Cost Analysis (page 1)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/5A5			PROGRAM ELEMENT:0603207N					PROJECT NAME AND NUMBER: X2342 METOC DATA ASSIMILATION AND MODELING				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WX	NRL	16,101	9,609	N/A	9,830	N/A	9,861	N/A	CONT	CONT	
	WX	NAWC-WD, PM	790	200	N/A	345	N/A	208	N/A	CONT	CONT	
	N/A	MISC	5,593	2,065	N/A	3,296	N/A	2,699	N/A	CONT	CONT	
		Univ.S. Miss		2,413								
Subtotal Product Development			22,484	14,287	N/A	13,471	N/A	12,768	N/A	CONT	CONT	
Remarks:												
Support	CP	SSA	295	0	N/A	0	N/A	0	N/A	CONT	CONT	
Subtotal Support			295	0	N/A	0	N/A	0	N/A	CONT	CONT	
Remarks												

R-1 Shopping List - Item No 43 (15) of 43 (27)

Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Project Cost Analysis (page 2)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/5A5				PROGRAM ELEMENT:0603207N				PROJECT NAME AND NUMBER: X2342 METOC DATA ASSIMILATION AND MODELING				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remarks												
Total Cost			22,779	14,287	N/A	13,471	N/A	12,768	N/A	CONT	CONT	
Remarks												

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2343
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: Tactical METOC Applications

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	To Complete	Total Program
X2343 Tactical METOC Applications									
	7,372	7,985	8,255	8,527	8,679	8,849	9,049	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The METOC Data Applications project is a continuing effort to develop and field 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. These assessments allow mission planners and warfighters, from the unit to theater level, to tactically optimize sensor employment on airborne, surface, and subsurface platforms in support of all Naval Composite Warfare mission areas including Undersea Warfare (USW), Anti-Submarine Warfare (ASW), Mine Warfare (MIW), Amphibious Warfare (AMW), Anti-Surface Warfare (ASUW), Anti-Air Warfare (AAW), Strike Warfare (STW), and Special Warfare. Emphasis is placed on products to support littoral and regional conflict scenarios. Performance assessments leading to improvements in tactical control are conducted through a two-tiered approach: 1) METOC Decision Aids (MDAs); and, 2) Tactical Decision Aids (TDAs). MDAs consist of a series of analysis tools which characterize the electromagnetic (EM), electro-optical (EO), atmospheric, oceanographic, and acoustical properties of the battlespace based on the best environmental scene description available at the time (i.e., some combination of historical and/or real-time (or near real-time) in-situ data. TDAs, also developed under this project, then use this information to predict how various weapons and sensor systems will perform given the current METOC conditions, and present these predictions in various tabular and graphic formats used by mission planners and combat/weapon system operators to develop ASW and MIW search and localization plans, USW/AAW/ASUW screens, STW profiles, AMW ingress and egress points, and other considerations. Project X2343 MDAs and TDAs use data obtained by sensors developed in Project X2341 (METOC Data Acquisition) and assimilated by software produced by Project X2342 (METOC Data Assimilation and Modeling), also contained in this Program Element. They also used data obtained through direct interfaces to the combat systems. A current emphasis area of the project is the development of new combat system and mine warfare performance prediction and MDA/TDA capabilities required to characterize and/or predict sensor and weapons system performance in the highly complex littoral environments in support of regional conflict scenarios. It addresses multi-warfare areas, particularly Mine Warfare, shallow water ASW, and missile and air defense/strike capabilities.

R-1 Shopping List - Item No 43 (17) of 43 (27)

Exhibit R-2a, RDT&E,N Project Justification (X2343)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2343

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: Tactical METOC Applications

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$1,025) Completed development of AREPS. Continued development of next generation Electro-optical decision aids. Began development of an advanced electromagnetic propagation model incorporating artificial intelligence techniques.
- (U) (\$2,269) Continued to incorporate prototype Mine Warfare tactical decision aids in baseline surface ship, air and submarine performance prediction systems. Continued to maximize littoral operation support by ensuring interoperability of system via existing Fleet communication mechanisms.
- (U) (\$1,668) Continued to apply advanced COTS visualization techniques to facilitate operator understanding of complex littoral environmental effects on sensor performance and integrate into appropriate platform ADMs. Perform at-sea evaluation of new capabilities.
- (U) (\$1,135) Continued to integrate platform vulnerability assessment TDA into surface ship, submarine and air ADMs to perform vulnerability assessment for acoustic and non-acoustic sensors and weapons. Evaluated functionality during at-sea tests.
- (U) (\$1,275) Continued to incorporate additional environmental sensor interface capabilities to allow for real time monitoring and measurement of key environmental parameters in support of the Oceanographer of the Navy's Battlespace METOC Data Acquisition, Assimilation and Applications strategy. Implemented in the platform ADMs and evaluated at-sea.

2. (U) FY 2002 PLAN:

- (U) (\$975) Complete development of next generation Electro-optical decision aids. Continue development of an advanced electromagnetic propagation model incorporating artificial intelligence techniques.

R-1 Shopping List - Item No 43 (18) of 43 (27)

Exhibit R-2a, RDT&E,N Project Justification (X2343)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2343

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: Tactical METOC
Applications

- (U) (\$2,980) Continue to incorporate prototype Mine Warfare tactical decision aids in baseline surface ship, air and submarine performance prediction systems. Continue to maximize littoral operation support by ensuring interoperability of system via existing Fleet communication mechanisms.
- (U) (\$1,775) Continue to apply advanced COTS visualization techniques to facilitate operator understanding of complex littoral environmental effects on sensor performance and integrate into appropriate platform ADMs. Perform at-sea evaluation of new capabilities.
- (U) (\$1,115) Continue to integrate platform vulnerability assessment TDA into surface ship, submarine and air ADMs to perform vulnerability assessment for acoustic and non-acoustic sensors and weapons. Evaluate functionality during at-sea tests.
- (U) (\$1,140) Continue to incorporate additional environmental sensor interface capabilities to allow for real time monitoring and measurement of key environmental parameters in support of the Oceanographer of the Navy's Battlespace METOC Data Acquisition, Assimilation and Applications strategy. Implement in the platform ADMs and evaluate at-sea.

3. (U) FY 2003 PLAN:

- (U) (\$1,334) Continue development of an advanced electromagnetic propagation model incorporating artificial intelligence techniques. Begin development of an advanced electro-optical decision aid incorporating artificial intelligence techniques.
- (U) (\$2,851) Continue to incorporate prototype Mine Warfare tactical decision aids in baseline surface ship, air and submarine performance prediction systems. Continue to maximize littoral operation support by ensuring interoperability of system via existing Fleet communication mechanisms.
- (U) (\$1,795) Continue to apply advanced COTS visualization techniques to facilitate operator understanding of complex littoral environmental effects on sensor performance and integrate into appropriate platform ADMs. Perform at-sea evaluation of new capabilities.

R-1 Shopping List - Item No 43 (19) of 43 (27)

Exhibit R-2a, RDT&E,N Project Justification (X2343)

UNCLASSIFIED

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603207N

PROJECT NUMBER: X2343

PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications

PROJECT TITLE: Tactical METOC Applications

- (U) (\$1,125) Continue to integrate platform vulnerability assessment TDA into surface ship, submarine and air ADMs to perform vulnerability assessment for acoustic and non-acoustic sensors and weapons. Evaluate functionality during at-sea tests.
- (U) (\$1,150) Continue to incorporate additional environmental sensor interface capabilities to allow for real time monitoring and measurement of key environmental parameters in support of the Oceanographer of the Navy's Battlespace METOC Data Acquisition, Assimilation and Applications strategy. Implement in the platform ADMs and evaluate at-sea.

B. (U) PROGRAM CHANGE SUMMARY:

(U) Funding: FY 2001 adjustments are due to Section 8086 .7% Pro-rata Reduction (-55); .22% Government Wide Rescission P.L. 106-554, Sec 1403 (-17), FY01 SBIR Assessment Apr-27-01 (-127) and Miscellaneous Navy Adjustments (-256). FY2002 adjustments are due to Section 8123: Management Reform Initiative (-71).

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

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

D. (U) ACQUISITION STRATEGY: Not applicable.

R-1 Shopping List - Item No 43 (20) of 43 (27)

Exhibit R-2a, RDT&E,N Project Justification (X2343)

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Exhibit R-3 Project Cost Analysis (page 1)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5			PROGRAM ELEMENT:0603207N					PROJECT NAME AND NUMBER: X2343 TACTICAL METOC APPLICATIONS				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WX	NUWC	1,400	0	N/A	0	N/A	0	N/A	CONT	CONT	
	WX	SSC SD	720	455	N/A	560	N/A	339	N/A	CONT	CONT	
	WX	NRL	600	342	N/A	137	N/A	358	N/A	CONT	CONT	
	CP	NAVSEA	6,486	6,070	N/A	6,715	N/A	6,237	N/A	CONT	CONT	
	CP	LOCKHEED	1,053	0	N/A	0	N/A	0	N/A	CONT	CONT	
	N/A	MISC	3,389	505	N/A	573	N/A	1,321	N/A	CONT	CONT	
Subtotal Product Development			13,648	7,372	N/A	7,985	N/A	8,255	N/A	CONT	CONT	
Remarks:												
Support	CP	IPD	595	0	N/A	0	N/A	0	N/A	CONT	CONT	
Subtotal Support			595	0	N/A	0	N/A	0	N/A	CONT	CONT	
Remarks												

R-1 Shopping List - Item No 43 (21) of 43 (27)

Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Project Cost Analysis (page 2)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT:0603207N				PROJECT NAME AND NUMBER: X2343 TACTICAL METOC APPLICATIONS				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remarks												
Total Cost			14,243	7,372	N/A	7,985	N/A	8,255	N/A	CONT	CONT	
Remarks												

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2344
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: Precise Timing and
Astrometry

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	To Complete	Total Program
X2344 Precise Timing and Astrometry									
	1,420	1,492	1,476	1,508	1,541	1,574	1,609	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The major thrusts of the Precise Timing and Astrometry Project in direct support of the U.S. Naval Observatory (USNO) are 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 and products of the USNO.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$425) Completed evaluation of GPS time transfer capability. Began development of next-generation time transfer capabilities.

R-1 Shopping List - Item No 43 (23) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2344)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2344
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: Precise Timing and
Astrometry

- (U) (\$285) Completed evaluation of cesium fountain clock and continued VLBI/GPS demonstration for earth orientation parameters.
- (U) (\$377) Completed InSb (Indium-Antimony) detector survey.
- (U) (\$333) Began exploitation of emergent Master Clock technologies.

2. (U) FY 2002 PLAN:

- (U) (\$375) Continue development of next-generation time transfer capabilities.
- (U) (\$425) Continue VLBI/GPS demonstration for earth orientation parameters.
- (U) (\$692) Continue exploitation of emergent Master Clock technologies.

3. (U) FY 2003 PLAN:

- (U) (\$390) Complete development of next-generation time transfer capabilities. Begin development of time transfer techniques incorporating neural networks to improve accuracy.
- (U) (\$430) Continue VLBI/GPS demonstration for earth orientation parameters.
- (U) (\$656) Continue exploitation of emergent Master Clock technologies.

B. (U) PROGRAM CHANGE SUMMARY:

- (U) Funding: FY 2001 adjustments are due to Section 8086 .7% Pro-rata Reduction (-10), .22% Government Wide Rescission P.L 106-554, Sec 1403 (-3), FY01 SBIR Assessment Apr-27-01 (-1) and Miscellaneous Navy Adjustments (-25). FY2002 adjustments are due to Section 8123: Management Reform Initiative (-13).

R-1 Shopping List - Item No 43 (24) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2344)

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EXHIBIT R-2a, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION (PROJECT)

DATE: February 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603207N PROJECT NUMBER: X2344
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Applications PROJECT TITLE: Precise Timing and
Astrometry

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E: None

D. (U) ACQUISITION STRATEGY: Not applicable.

R-1 Shopping List - Item No 43 (25) of 43 (27)

Exhibit R-2a, RDT&E Project Justification (X2344)

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Exhibit R-3 Project Cost Analysis (page 1)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0603207N				PROJECT NAME AND NUMBER: X2344 PRECISE TIMING AND ASTROMETRY				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Product Development	WX	NAVAL OBSERVATORY	2,788	1,385	N/A	1,385	N/A	1,476	N/A	CONT	CONT	
	N/A	MISC		35		107						
Subtotal Product Development			2,788	1,420	N/A	1,492	N/A	1,476	N/A	CONT	CONT	
Remarks:												
Subtotal Support												
Remarks												

UNCLASSIFIED

Exhibit R-3 Project Cost Analysis (page 2)								Date: February 2002				
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA5				PROGRAM ELEMENT: 0603207N				PROJECT NAME AND NUMBER: X2344 PRECISE TIMING AND ASTROMETRY				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total FY00+ PY Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remarks												
Total Cost			2,788	1,420	N/A	1,492	N/A	1,476	N/A	CONT	CONT	
Remarks												

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:		February 2002		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost			7.346	13.703	7.486	7.618	6.475	6.549	6.639	Continuing	Continuing
W0584 Aircrew Protective Clothing and Devices			2.821	2.850	2.895	2.964	2.519	2.547	2.579	Continuing	Continuing
W0591 Aircraft Survivability, Vulnerabilty and Safety			1.813	1.876	1.857	1.884	1.593	1.615	1.642	Continuing	Continuing
W0592 A/C & Ordnance Safety			1.742	1.729	1.772	1.789	1.532	1.546	1.566	Continuing	Continuing
W1819 Carrier Vehicle Aircraft Fire Suppression System			0.970	1.017	0.962	0.981	0.831	0.841	0.852	Continuing	Continuing
W9034 Modular Helmet and Display Development				1.982							1.982
W9036 Color Focal Plane Array				4.249							4.249
Quantity of RDT&E Articles	Not Applicable										
* The FY 2002 budget reflects a \$4.300M Congressional add for Color Focal Plane Array executed under project W9036, which was reduced by \$.051M for a Congressional undistributed reduction, that was erroneously included in this program element.											
(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.											
(U) Aircrew Protective Clothing and Devices develops, demonstrates, and validates technology options that enhance aircrew capability to perform assigned missions. In addition, this project ensures aircrew protection against natural and induced environmental or physiological hazards encountered during routine, combat and emergency flight operations as well as during escape, and survival and rescue, following loss of aircraft.											
(U) Projects W0591, W0592, and W1819 focus on platform survivability, addressing the reductions in aircraft susceptibility to enemy and non-combat threats, as well as aircraft vulnerabilities to conventional, nuclear, chemical, biological, radiological and directed energy weapons. The Aircraft Survivability, Vulnerability and Safety project expands the survivability technology base and develops prototype hardware which is required to improve the survivability of Naval aircraft. Aircraft and Ordnance Safety transitions generic insensitive munitions technology to Navy and Marine Corps air weapons, ensuring that they are insensitive to fast cook-off, slow cook-off, and fragment impact and sympathetic detonation. Carrier Aircraft Fire Suppression Systems develops improved fire fighting systems and fire protective measures for aircraft carriers. Project W9034 reflects a Congressional Add that will complete development of the low resolution Crusader modular helmet, and begin development of an enhanced Advanced Helmet Vision System.											
(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION and VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft applications.											

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 1 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			2.821	2.850	2.895	2.964	2.519	2.547	2.579	Continuing	Continuing
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project W0584 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. In 1996, the various sub-projects were restructured into a combined Advanced Technology Crew Station (ATCS) and Advanced Integrated Life Support System (AILSS) program. This project is validated by two Non-Acquisition Development Documents (NAPDDS)-- one for an ATCS, and the other for AILSS.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <p>-(U) (\$1.210) Continued Advanced Technology Escape System (ATES) using controllable propulsion (Fourth Generation Escape System). Continued component integration.</p> <p>-(U) (\$.304) Completed enhanced resolution Crusader day/night all weather helmet mounted display system.</p> <p>-(U) (\$.434) Continued Smart Aircrew Integrated Life Support System (SAILSS).</p> <p>-(U) (\$.547) Completed technology demonstration for non-linear materials phase of frequency agile laser eye protection development.</p> <p>-(U) (\$.326) Continued development of Pilot Vehicle Interface (PVI) with on board /off board data fusion.</p>											

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 2 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices
<p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none">-(U) (\$.512) Exercise option to begin development of frequency Agile flight worthy unity magnification goggles (laser eye protection).-(U) (\$.281) Begin system integration and flight testing of Advanced Helmet Vision System enhanced resolution Crusader. Conduct I2/Thermal mode control studies.-(U) (\$.466) Integrate SAILSS with on-board oxygen and personal air conditioning systems.-(U) (\$.377) Integrate PVI on-board/off-board data correlation on test aircraft and begin flight testing.-(U) (\$.555) Integrate ATES ejection seat trajectory and crashworthy seat stroking models with biodynamic models. Incorporate computational fluid dynamics and parachute models.-(U) (\$.297) Conduct preliminary ergonomic seating design, validate BioRID performance, and mature final version.-(U) (\$.276) Begin crewstation technology laboratory demonstration of Active Network Guidance Emergency Logic (ANGEL).-(U) (\$.086) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638. <p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none">-(U) (\$.326) Continue development of frequency Agile flight worthy goggles, begin laboratory and field testing of prototypes.-(U) (\$.380) Complete flight testing of Advanced Helmet Vision System enhanced resolution Crusader.-(U) (\$.474) Complete the integration of SAILSS on-board oxygen systems and personal air conditioning system.		

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 3 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices
<p>3. FY 2003 PLANS (continued):</p> <ul style="list-style-type: none">-(U) (\$.279) Incorporate models of helmet mounted displays into the PVI to support testing and validation of on board/off board data correlation.-(U) (\$.480) Continue ATES, exploring various integrated aircrew head/neck protection configurations for ejection safe helmet mounted systems.-(U) (\$.428) Conduct horizontal accelerator/vibrating platform assessment of ergonomics, posture, and crashworthiness.-(U) (\$.528) Begin system integration laboratory demonstration of ANGEL.		

R-1 SHOPPING LIST - Item No. 44

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 4 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices

(U) B. PROGRAM CHANGE SUMMARY:

	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>
(U) FY 2002 President's Budget:	2.842	2.875	
(U) Adjustments from the FY 2002 President's Budget:	-0.021	-0.025	
(U) FY 2003 President's Budget Submit:	2.821	2.850	2.895

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 2001 net decrease of \$0.021 million consist of a \$0.012 million decrease for Small Business Innovation Research Assessment and a \$.009 million decrease for reprioritization of requirement within the Navy. The FY 2002 net decrease of \$0.025 million is for a undistributed congressional reduction.

(U) Schedule: Not applicable.
(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Related RDT&E

- (U) PE 0602201F (Aerospace Flight Dynamics)
- (U) PE 0602233N (Mission Support Equipment)
- (U) PE 0604264N (Aircrew Systems Development)
- (U) PE 0604706F (Life Support Systems)
- (U) PE 06023231F (Crew Systems and Personal Protection Technology)

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 5 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME	
RDT&E, NBA-4	0603216N Aviation Survivability		W0584 Aircrew Protective Clothing and Devices	
(U) D. ACQUISITION STRATEGY: Not applicable				
(U) E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones				
4th Generation Escape (ATES) & controllable propulsion	Continue	Complete integration 1Q 02		
Crusader Day/Night All Weather Display System	Complete 4Q 01			
Crusader High Resolution Upgrade		Initiate 1Q 02	Continue	Continue
Frequency Agile Laser Eye Protection (non-linear materials)	Complete Tech Demo (4Q 01)	Begin prototype develop. (1Q 02)	Initiate lab goggle testing (1Q 02)	Continue
SAILSS	Continue	Continue	Continue	Continue
PVI - On Board/Off Board Data Correlation	Complete interface development	Integrate into test aircraft and begin flight testing	Complete On Board/Off Board 3 Q 03	
(U) Engineering Milestones				
(U) T&E Milestones				
Crusader day/night High resolution system DT-1		Initiate 1Q 02	Complete 4Q 03	
ANGEL		Initiate Demonstrations 1Q 02	Continue	Continue
(U) Contract Milestones	Not applicable			

R-1 SHOPPING LIST - Item No. 44

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0584 Aircrew Protective Clothing and Devices						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Miscellaneous	WX	NAWC AD Pax River	16.641	1.367	Various	1.258	Various	1.351	Various	Continuing	Continuing	
Miscellaneous	Various	Various	10.765								10.765	10.765
McDonnell Douglas	C/CPFF	McDonnell Douglas, St. Louis	1.325								1.325	1.325
Boeing	C/CPFF	Boeing, Seattle, Wa	1.660								1.660	1.660
Subtotal Product Development			30.391	1.367		1.258		1.351		Continuing	Continuing	
Remarks:												
Miscellaneous	Various	Various	1.019	0.467	Various	0.500	Various	0.519	Various	Continuing	Continuing	
Subtotal Support			1.019	0.467		0.500		0.519		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0584 Aircrew Protective Clothing and Devices						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	13.873	0.977	Various	0.996	Various	1.015	Various	Continuing	Continuing	
Subtotal T&E			13.873	0.977		0.996		1.015		Continuing	Continuing	
Remarks:												
Travel	WX	NAWC AD Patuxent River	0.085	0.010	10/00	0.010	10/01	0.010	10/02	Continuing	Continuing	
SBIR assessment						0.086					0.086	
Subtotal Management			0.085	0.010		0.096		0.010		Continuing	Continuing	
Remarks:												
Total Cost			45.368	2.821		2.850		2.895		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification									DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0591 Aircraft Survivability and Vulnerability					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost			1.813	1.876	1.857	1.884	1.593	1.615	1.642	Continuing	Continuing
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>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.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none">- (U) (\$1.424) Completed the development of a rotary wing IR survivability signature suppression system.- (U) (\$.020) Prepared biannual update of RDT&E master plan.- (U) (\$.020) Prepared annual update of Aircraft Survivability Database.- (U) (\$.122) Continued development of Survivability Analysis Methodology (based on FY99 roadmap).-(U) (\$.227) Continued Unmanned Air Vehicles (UAV) survivability trade study (defined hardware technology candidate).											

R-1 SHOPPING LIST - Item No. 44

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216 Aviation Survivability	W0591 Aircraft Survivability, Vulnerability, and Safety
<p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none">- (U) (\$1.336) Continue UAV Survivability Enhancement (design and fabrication of selected technology candidates).- (U) (\$.183) Initiate Transport/Reconnaissance Survivability program; focus on trade study/cost analysis.- (U) (\$.200) Initiate Aircraft Advanced Fire Protection Technology trade study.- (U) (\$.100) Initiate Advanced Threats study (Start radio frequency (RF) weapons).- (U) (\$.057) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15USC 638. <p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none">- (U) (\$1.361) Continue UAV Survivability Enhancement platform integration (complete flight test).- (U) (\$.194) Continue Transport/Reconnaissance Survivability program (complete trade study/define hardware technology candidate)- (U) (\$.027) Continue Advanced Threats study (Complete RF weapons. Start high energy laser).- (U) (\$.250) Complete Advanced Fire Protection Technology (design, fabrication, cost).- (U) (\$.025) Biannual update of RDT&E master plan.		

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 10 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216 Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability, and Safety																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;"><u>FY2001</u></th><th style="text-align: center;"><u>FY2002</u></th><th style="text-align: center;"><u>FY2003</u></th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">1.884</td><td style="text-align: center;">1.893</td><td></td></tr><tr><td>(U) Adjustments from the FY 2002 President's Budget:</td><td style="text-align: center;">-0.071</td><td style="text-align: center;">-0.017</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">1.813</td><td style="text-align: center;">1.876</td><td style="text-align: center;">1.857</td></tr></tbody></table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: The FY 2001 net decrease of \$.071 million consists of a \$.028 million decrease for a Small Business Innovative Research Assessment and a \$.043 million decrease for reprioritization of requirements within the Navy. The FY 2002 decrease of \$.017 million is for an undistributed Congressional reduction.</p> <p>(U) Schedule: Not applicable</p> <p>(U) Technical: Not Applicable</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p>Related RDT&E:</p> <ul style="list-style-type: none">(U) PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)(U) PE 0603384D (Chemical/Biological Defense (Advanced Development))				<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:	1.884	1.893		(U) Adjustments from the FY 2002 President's Budget:	-0.071	-0.017		(U) FY 2003 President's Budget Submit:	1.813	1.876	1.857
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>															
(U) FY 2002 President's Budget:	1.884	1.893																
(U) Adjustments from the FY 2002 President's Budget:	-0.071	-0.017																
(U) FY 2003 President's Budget Submit:	1.813	1.876	1.857															

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N BA-4	06031216N Aviation Survivability	W0591 Aviation Survavility, Vulnerability and Safety		
(U) D. ACQUISITION STRATEGY: Not applicable				
(U) E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones				
UAV survivability trade study	Completed 3Q01			
Bi-annual Master Plan updates	Completed 4Q01		Complete 4Q03	Continue
Transport/Reconnaissance Survivability Trade Study		Initiate 2Q02	Complete 4Q03	
Advanced Threats Trade Study (RF weapons)		Initiate 1Q02	Complete 4Q03	
Advanced A/C Fire Protection Trade Study		Initiate 2Q02/Comp 4Q02		
(U) Engineering Milestones				
Not applicable				
(U) T&E Milestones				
IR Suppressor flight test	Completed 4Q01			
UAV flight test		Initiate 4Q02	Complete 4Q03	
Advanced Aircraft Fire Protection Demonstration			Initiate 1Q03/Complete 3Q03	
(U) Contract Milestones				
Not applicable				

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability, and Safety					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Sikorsky, Connecticut	2.454	0.659	10/00						3.113	3.113
Primary Hardware Development	TBD	Contractor TBD				0.885	03/02	0.717	10/02		1.602	1.602
Primary Hardware Development	WX	Various- Govt activities				0.050	10/01	0.150	10/02		0.200	
Systems Engineering	WX	Various	5.754	0.481	10/00	0.839	11/01	0.420	10/02	Continuing	Continuing	
Primary Hardware Development	SS/CFFF	Bell Helicopter	1.307								1.307	1.307
Subtotal Product Development			9.515	1.140		1.774		1.287		Continuing	Continuing	
Remarks:												
Technical Data	WX	Various	0.143	0.111	11/00			0.025	11/02	Continuing	Continuing	
Subtotal Support			0.143	0.111				0.025		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEEN Budget Item Justification
(Exhibit R-2, page 13 of 28)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	Various	1.018	0.552	10/00			0.500	10/02	Continuing	Continuing	
Subtotal T&E			1.018	0.552				0.500		Continuing	Continuing	
Remarks:												
Program Management Support	WX	Various				0.035	10/01	0.035	10/02	Continuing	Continuing	
Travel	WX	Various	0.185	0.010	10/00	0.010	10/01	0.010	10/02	Continuing	Continuing	
SBIR assessment						0.057					0.057	
Subtotal Management			0.185	0.010		0.102		0.045		Continuing	Continuing	
Remarks:												
Total Cost			10.861	1.813		1.876		1.857		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 14 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: FEBRUARY 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0592 A/C & Ordnance Safety					
COST (\$ in Millions)	Prior Years Cost	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program	
Project Cost		1.742	1.729	1.772	1.789	1.532	1.546	1.566	Continuing	Continuing	
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This project transitions Insensitive Munitions (IM) technology from IM Advanced Development (generic technology) to Air Weapon Systems to comply with Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to fast cook-off (FCO), slow cook-off (SCO), bullet and fragment impact (BI and FI), and sympathetic detonation (SD).</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> - (U) (\$.844) Continued evaluating reactive material warheads for IM compliance. - (U) (\$.400) Demonstrated pumice as a sympathetic detonation barrier for weapon shipping containers. - (U) (\$.498) Completed flight testing and document flight certification process for Sidewinder composite case. <p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none"> - (U) (\$.473) Continue evaluating reactive material warheads for IM compliance. Conduct IM and performance testing on sub-scale manufactured 2.75-inch motors. - (U) (\$.561) Demonstrate pumice as a sympathetic detonation barrier for weapon shipping containers. Refine pumice design capability for SD mitigation. - (U) (\$.643) Continue ground and flight testing Sidewinder composite rocket motor. Conduct air to air missile IM warhead testing. - (U) (\$.052) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638. 											

R-1 SHOPPING LIST - Item 44

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0592 A/C & Ordnance Safety
<p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none">- (U) (\$.751) Continue evaluating reactive material warheads for IM compliance.- (U) (\$.800) Conduct MK36/Sidewinder composite case IM testing demonstration. Begin medium range air to air composite case/HTPE propellant IM demonstration.- (U) (\$.221) Continue air to air missile IM warhead testing.		

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 16 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0592 A/C & Ordnance Safety																	
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;"><u>FY2001</u></th><th style="text-align: center;"><u>FY2002</u></th><th style="text-align: center;"><u>FY2003</u></th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">1.750</td><td style="text-align: center;">1.744</td><td></td></tr><tr><td>(U) Adjustments from the FY2002 President's Budget:</td><td style="text-align: center;">-0.008</td><td style="text-align: center;">-0.015</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">1.742</td><td style="text-align: center;">1.729</td><td style="text-align: center;">1.772</td></tr></tbody></table> <p style="margin-top: 20px;">CHANGE SUMMARY EXPLANATION:</p> <p style="margin-left: 40px;">(U) Funding: FY2001 net decrease of \$.008 million is for reprioritization of requirements within the Navy. FY2002 net decrease of \$.015 million is for an undistributed congressional reduction.</p> <p style="margin-left: 40px;">(U) Schedule: Not applicable</p> <p style="margin-left: 40px;">(U) Technical: Not applicable</p> <p style="margin-top: 40px;">(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable</p> <p style="margin-left: 40px;">Related RDT&E:</p> <p style="margin-left: 80px;">PE 0604802A PE 0603609N</p> <p style="margin-top: 40px;">(U) D. ACQUISITION STRATEGY: This is a non-ACAT program with no specific acquisition strategies.</p> <p style="margin-top: 10px;">(U) E. SCHEDULE PROFILE: Not applicable</p>					<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:	1.750	1.744		(U) Adjustments from the FY2002 President's Budget:	-0.008	-0.015		(U) FY 2003 President's Budget Submit:	1.742	1.729	1.772
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>																
(U) FY 2002 President's Budget:	1.750	1.744																	
(U) Adjustments from the FY2002 President's Budget:	-0.008	-0.015																	
(U) FY 2003 President's Budget Submit:	1.742	1.729	1.772																

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 17 of 28)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: FEBRUARY 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0592 A/C & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	NAWCWD China Lake	12.585	1.712	10/00	1.647	10/01	1.742	10/02	Continuing	Continuing	
Subtotal Product Development			12.585	1.712		1.647		1.742		Continuing	Continuing	
Remarks:												
Subtotal Support												
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)							DATE: FEBRUARY 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0592 A/C & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks:												
Travel	WX	NAWCAD Pax River	0.060	0.030	10/00	0.030	10/01	0.030	10/02	Continuing	Continuing	
SBIR assessment						0.052					0.052	
Subtotal Management			0.060	0.030		0.082		0.030		Continuing	Continuing	
Remarks:												
Total Cost			12.645	1.742		1.729		1.772		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4		0603216N Aviation Survivability				W1819 Carrier Vehicle Aircraft Fire Suppression System						
COST (\$ in Millions)		Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost				0.970	1.017	0.962	0.981	0.831	0.841	0.852	Continuing	Continuing
RDT&E Articles Qty												
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>This project develops improved fire fighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire fighter training improvements.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS</p> <ul style="list-style-type: none">- (U) (\$.296) Completed testing and finalized fire test standards for wheel/brake, electrical, and spill fires. Completed identification of critical test parameters and provision of adequate instrumentation for testing. Compiled pros and cons of each system for review.- (U) (\$.269) Continued carrier reduced manning studies. Evaluated potential negative safety impact of reduced manning of Navy ships relative to current levels of onboard fire fighting provisions. Ensured adequate fire fighting provisions are maintained through evaluation of systems hardware enhancements, development of novel fire fighting approaches, and optimized personnel emergency procedures. Assessed opportunities for overall improvement in shipboard handling of fire emergencies.- (U) (\$.080) Initiated studies of fire threat from alternate fuel. Evaluated the different characteristics of JP-8 versus JP-5 fires. Identified deficiencies and promoted opportunities for improvement.- (U) (\$.325) Evaluated next generation fire threats aboard carriers. Assessed enhanced fire threats associated with more reliance on high powered electrical and electromagnetic components aboard ship. Evaluated remote fire detection and fire suppression methodologies and tested prototypical hardware for performance.												

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 20 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System
<p>2. FY 2002 PLANS</p> <p>(U) (\$.198) Evaluate alternatives to Aqueous Film Forming Foam (AFFF) for compliance with environmental, safety, and health regulations. Assess agent compatability with next generation fire threats. Continue development of acceptable fire fighting agents.</p> <p>(U) (\$.477) Evaluate systems tailored to composite fire threats. Develop enhancements to Personnel Protection Equipment. Continue development of acceptable fire fighting systems.</p> <p>(U) (\$.311) Continue reduced manning evaluations. Develop techniques to minimize threat from involved ordnance. Optimize training apparatus and provide opportunities for training during agent/system testing. Continue development of acceptable fire fighting tactics.</p> <p>(U) (\$.031) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15USC 638.</p> <p>3. FY 2003 PLANS</p> <p>(U) (\$.207) Develop new or enhanced agents to adequately address changing fire threats. Continue development of acceptable fire fighting agents.</p> <p>(U) (\$.491) Evaluate system automation features. Develop enhancements to Personnel Protection Equipment. Continue development of acceptable fire fighting systems.</p> <p>(U) (\$.264) Continue carrier reduced manning evaluations. Continue to optimize training apparatus and provide opportunities for training during agent/system testing. Continue development of acceptable fire fighting tactics.</p>		

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 21 of 28)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;"><u>FY2001</u></th><th style="text-align: center;"><u>FY2002</u></th><th style="text-align: center;"><u>FY2003</u></th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">0.982</td><td style="text-align: center;">1.026</td><td></td></tr><tr><td>(U) Adjustments from the FY 2002 President's Budget:</td><td style="text-align: center;">-0.012</td><td style="text-align: center;">-0.009</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">0.970</td><td style="text-align: center;">1.017</td><td style="text-align: center;">0.962</td></tr></tbody></table> <p style="margin-top: 20px;">CHANGE SUMMARY EXPLANATION:</p> <p style="margin-left: 40px;">(U) Funding: The FY 2001 net decrease of \$.012 million consists of a \$.009 million decrease for a Small Business Innovative Research Assessment and a \$.003 million decrease for reprioritization of requirements within the Navy. The FY 2002 net decrease of \$.009 million is for an undistributed Congressional reduction.</p> <p style="margin-left: 40px;">(U) Schedule: Not Applicable</p> <p style="margin-left: 40px;">(U) Technical: Not Applicable</p> <p style="margin-top: 40px;">(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable</p> <p style="margin-left: 40px;">Related RDT&E: Not applicable</p> <p style="margin-top: 20px;">(U) D. ACQUISITION STRATEGY: Not applicable</p> <p style="margin-top: 20px;">(U) E. SCHEDULE PROFILE: Not applicable</p>				<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:	0.982	1.026		(U) Adjustments from the FY 2002 President's Budget:	-0.012	-0.009		(U) FY 2003 President's Budget Submit:	0.970	1.017	0.962
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>															
(U) FY 2002 President's Budget:	0.982	1.026																
(U) Adjustments from the FY 2002 President's Budget:	-0.012	-0.009																
(U) FY 2003 President's Budget Submit:	0.970	1.017	0.962															

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 22 of 28)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			0603216N Aviation Survivability			W1819 Carrier Vehicle Aircraft Fire Suppression System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Systems Engineering	WX	MISC	5.414	0.184	Various	0.440	Various	0.404	Various	Continuing	Continuing		
Subtotal Product Development			5.414	0.184		0.440		0.404		Continuing	Continuing		
Remarks:													
Configuration Management	WX	MISC	1.360	0.354	Various	0.091	Various	0.098	Various	Continuing	Continuing		
Subtotal Support			1.360	0.354		0.091		0.098		Continuing	Continuing		
Remarks:													

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W1819 Carrier Vehicle Aircraft Fire Suppression System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	MISC	2.933	0.422	Various	0.444	Various	0.445	Various	Continuing	Continuing	
Subtotal T&E			2.933	0.422		0.444		0.445		Continuing	Continuing	
Remarks:												
Travel	WX	MISC	0.045	0.010	10/00	0.011	10/01	0.015	10/02	Continuing	Continuing	
SBIR assessment						0.031					0.031	
Subtotal Management			0.045	0.010		0.042		0.015		Continuing	Continuing	
Remarks:												
Total Cost			9.752	0.970		1.017		0.962		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost				1.982							1.982
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project will complete the development of the low resolution crusader modular helmet, and begin development of an enhanced Advaced Helmet Vision System.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2002 PLANS:</p> <p>-(U) (\$.900) Complete the development of the low resolution Crusader modular helmet.</p> <p>-(U) (\$.800) Begin the development of the enhanced resolution variant to be entitled Advanced Helmet Vision System (AHVS). Currently the system exists as a walk around demonstrator which will be missionized to support limited flight testing.</p> <p>-(U) (\$.282) Laboratory evaluation of Crusader final and prototype AHVS to include resolution, brightness, weight, center of gravity and moments of inertia.</p>											

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:																
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME																
RDT&E, N / BA-4	0603216N Aviation Survivability	W9034 Modular Helmet and Display Development																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table><thead><tr><th></th><th><u>FY2001</u></th><th><u>FY2002</u></th><th><u>FY2003</u></th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td></td><td>0.000</td><td></td></tr><tr><td>(U) Adjustments from the FY 2002 President's Budget:</td><td></td><td>1.982</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td></td><td>1.982</td><td></td></tr></tbody></table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: The FY 2002 net increase of \$1.982 million reflects a congressional add for Modular Helmet and Display Development.</p> <p>(U) Schedule: Not applicable. (U) Technical: Not applicable.</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <p>Aircrew Protective Clothing and Devices Project W0584</p> <p>Related RDT&E</p> <p>(U) PE 0602201F (Aerospace Flight Dynamics) (U) PE 0602233N (Mission Support Equipment) (U) PE 0604264N (Aircrew Systems Development) (U) PE 0604706F (Life Support Systems) (U) PE 06023231F (Crew Systems and Personal Protection Technology)</p>				<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:		0.000		(U) Adjustments from the FY 2002 President's Budget:		1.982		(U) FY 2003 President's Budget Submit:		1.982	
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>															
(U) FY 2002 President's Budget:		0.000																
(U) Adjustments from the FY 2002 President's Budget:		1.982																
(U) FY 2003 President's Budget Submit:		1.982																

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 26 of 28)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE:						
APPROPRIATION/BUDGET ACTIVITY						February 2002						
RDT&E, N / BA-4			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
			0603216N Aviation Survivability			W9034 Modular Helmet and Display Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	MISC				1.962	Various				1.962	1.962
Subtotal Product Development						1.962					1.962	1.962
Subtotal Support												

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 28 of 28)

R-1 SHOPPING LIST - Item No. 44

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603237N PROJECT NUMBER: X3050
PROGRAM ELEMENT TITLE: Deployable Joint Command & Control PROJECT TITLE: DJC2

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X3050 DJC2	0	0	39,772	49,748	44,677	44,602	9,896	CONT.	CONT.
Defense Emergency Response Fund (DERF)			7,500						
TOTALS	0	0	39,772	49,748	44,677	44,602	9,896	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Deployable Joint Command and Control (DJC2) is a DoD transformation initiative that will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 mission capability will provide the material solution to Defense Planning Guidance (August 2001 DPG) that calls for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. The DJC2 concept is the common basis supporting both the Quadrennial Defense Review (QDR) request for a joint command and control architecture to be developed for standing JTFs at each of the regional CINCs and the requirements for a deployable Joint Command and Control System requirements described in the Transformation Study Report presented to the Secretary of Defense, April, 2001. It integrates the requirements for and lessons learned from U.S. Central Command's deployable headquarters that is being funded from the FY 2001 Emergency Supplemental Act for Recovery from and Response to Terrorist Attacks on the United States. DJC2 is supported by SECDEF and CJCS. It has been briefed to the JCS/Joint Requirement Oversight Council (JROC), which has approved a DJC2 Mission Needs Statement (MNS) and directed that a draft Operational Requirements Document (ORD) be produced in 2002.

DJC2 seeks to provide standing, and standardized, joint C2 systems that can be deployed by unified CINCs or JTFs, remedying the current unproductive practice of relying on ad hoc, unresourced, and stove-piped capabilities cobbled together at the last minute during a crisis. It will support new standing JTF headquarter concepts and doctrine being developed by Joint Forces Command in coordination with other CINCs and the Joint Staff, as tasked by DPG. Unified CINC and JTF commanders will use a deployable joint command and control capability for day-to-day operations (including peacetime), 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 unified CINC and JTF mission requirements. This capability must be interoperable with

R-2 Shopping List - Item No. 45 - 1 of 8

UNCLASSIFIED

Exhibit R-2, BUDGET ITEM JUSTIFICATION

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4	PROGRAM ELEMENT: 0603237N	PROJECT NUMBER: X3050
	PROGRAM ELEMENT TITLE: Deployable Joint Command & Control	PROJECT TITLE: DJC2

higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

The RDT&E initiative ("Future Threat Systems") was established in response to recent terrorists attacks within the United States that designated the Navy as the Executive Agent for developing and fielding of DJC2 centers to CINC/JTF headquarters; it provided no outyear funds. A second initiative ("Defense Transformation") established an outyear RDT&E, OPN, SCN, and O&M,N profile.

B. (U) PROGRAM CHANGE SUMMARY: Not applicable.

R-2 Shopping List - Item No. 45 - 2 of 8

UNCLASSIFIED

Exhibit R-2, BUDGET ITEM JUSTIFICATION

UNCLASSIFIED

FY 2003 RDT&E,N PROJECT JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603237N PROJECT NUMBER: X3050
PROGRAM ELEMENT TITLE: Deployable Joint Command & Control PROJECT TITLE: DJC2

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X3050 DJC2	0	0	39,772	49,748	44,677	44,602	9,896	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Deployable Joint Command and Control (DJC2) is a DoD transformation initiative that will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. DJC2 mission capability will provide the material solution to Defense Planning Guidance (August 2001 DPG) that calls for the development of standing Joint Task Forces (JTFs) with a deployable C2 capability. The DJC2 concept is the common basis supporting both the Quadrennial Defense Review (QDR) request for a joint command and control architecture to be developed for standing JTFs at each of the regional CINCs and the requirements for a deployable Joint Command and Control System requirements described in the Transformation Study Report presented to the Secretary of Defense, April, 2001. It integrates the requirements for and lessons learned from U.S. Central Command's deployable headquarters that is being funded from the FY 2001 Emergency Supplemental Act for Recovery from and Response to Terrorist Attacks on the United States. DJC2 is supported by SECDEF and CJCS. It has been briefed to the JCS/Joint Requirement Oversight Council (JROC), which has approved a DJC2 Mission Needs Statement (MNS) and directed that a draft Operational Requirements Document (ORD) be produced in 2002.

DJC2 seeks to provide standing, and standardized, joint C2 systems that can be deployed by unified CINCs or JTFs, remedying the current unproductive practice of relying on ad hoc, unresourced, and stove-piped capabilities cobbled together at the last minute during a crisis. It will support newstanding JTF headquarter concepts and doctrine being developed by Joint Forces Command in coordination with other CINCs and the Joint Staff, as tasked by DPG. Unified CINC and JTF commanders will use a deployable joint command and control capability for day-to-day operations (including peacetime), 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 unified CINC 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.

The RDT&E initiative ("Future Threat Systems") was established in response to recent terrorists attacks within the United States that designated the Navy as the Executive Agent for developing and fielding of DJC2 centers to CINC/JTF headquarters;

R-1 Shopping List -Item No. 45 - 3 of 8

UNCLASSIFIED

Exhibit R-2A, PROJECT JUSTIFICATION

UNCLASSIFIED

FY 2003 RDT&E,N PROJECT JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4	PROGRAM ELEMENT: 0603237N	PROJECT NUMBER: X3050
	PROGRAM ELEMENT TITLE: Deployable Joint Command & Control	PROJECT TITLE: DJC2

it provided no outyear funds. A second initiative ("Defense Transformation") established an outyear RDT&E, OPN, SCN, and O&M,N profile.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2002 ACCOMPLISHMENTS:

- Not Applicable. No funding available.

2. (U) FY 2003 PLAN:

- (U) (\$19,822) Study of CINC/JTF deployable C2 requirements and identification of candidate programs, both fielded and under development, to satisfy requirements. Conduct engineering and design studies necessary to develop the DJC2 technical design; validation of concept of operations to ensure user needs are adequately understood in evaluating alternative concepts; and analysis of alternatives to establish realistic cost, schedule and performance goals for the preferred material solution.
- (U) (\$9,900) Evaluate validated technical concepts and technologies prototyped in advanced technology transitions, including Advanced Concepts Technology Demonstration Programs, to address deployable C2 requirements.
- (U) (\$5,000) Navy managed engineering, integration, test & analysis facility. Support extended spiral development of commercial technologies to develop deployable C2 centers for each of the four geographic CINCs and one maritime platform.
- (U) (\$5,000) Start-up for a joint program office and conduct of pre-acquisition planning activities. Navy will serve as Executive Agent (EA) for DJC2 due to previous conceptual work completed for Joint Communication Center(X) C4ISR mission package.
- Accelerate the collaborative development of an indications, alert and warning (IAW) capability.

R-1 Shopping List -Item No. 45 - 4 of 8

UNCLASSIFIED

Exhibit R-2A, PROJECT JUSTIFICATION

UNCLASSIFIED

FY 2003 RDT&E,N PROJECT JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603237N PROJECT NUMBER: X3050
PROGRAM ELEMENT TITLE: Deployable Joint Command & Control PROJECT TITLE: DJC2

B. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

<u>Appn</u>	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	COST TO COMPLETE	TOTAL PROGRAM
OPN (0305188N)	0	0	0	80,000	35,000	30,000	0	CONT.	CONT.
SCN (0204228N)	0	0	0	0	0	0	60,000	CONT.	CONT.
OMN (0305188N)	0	0	2,500	2,500	6,500	2,500	11,500	CONT.	CONT.

(U) RELATED RDT&E:

- PE 0604231N: (GCCS-M Maritime Apps X0709): GCCS-M Maritime Apps provides portions of GCCS-M functionality common among Afloat, Ashore, and Tactical/Mobile environments.
- PE 0604231N: (GCCS-M Common Apps X2305): GCCS-M Common Apps provides portions of the Defense Information Infrastructure Common Operating Environment (DII COE) functionality required by Afloat, Ashore, and Tactical/Mobile GCCS-M environments.

C. (U) ACQUISITION STRATEGY: N/A

R-1 Shopping List -Item No. 45 - 5 of 8

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Exhibit R-2A, PROJECT JUSTIFICATION

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FY 2003 RDT&E,N PROJECT JUSTIFICATION

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603237N

PROJECT NUMBER: X3050

PROGRAM ELEMENT TITLE: Deployable Joint Command & Control

PROJECT TITLE: DJC2

D. (U) SCHEDULE PROFILE:

	<u>FY 2001</u>				<u>FY 2002</u>				<u>FY 2003</u>			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones												
Engineering Milestones												
T&E Milestones												
Contract Milestones												

R-1 Shopping List -Item No. 45 - 6 of 8

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Exhibit R-2A, PROJECT JUSTIFICATION

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FY 2003 RDT&E,N PROJECT COST ANALYSIS

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT:

0603237N

PROJECT NUMBER: X3050

PROGRAM ELEMENT TITLE:

Deployable Joint Command & Control

PROJECT TITLE: DJC2

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software/Product Development												
Subtotal Product Development												
Remarks:												
System Engineering	TBD	TBD						19,822	TBD	CONT.	CONT.	
Adv. Concept Demos	TBD	TBD						9,900	TBD	CONT.	CONT.	
Subtotal Sys Eng Support	TBD	TBD						29,722	TBD	CONT.	CONT.	
Remarks												

R-1 Shopping List -Item No. 45 - 7 of 8

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Exhibit R-3, PROJECT COST ANALYSIS

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FY 2003 RDT&E,N PROJECT COST ANALYSIS

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT:

0603237N

PROJECT NUMBER: X3050

PROGRAM ELEMENT TITLE:

Deployable Joint Command & Control

PROJECT TITLE: DJC2

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY01Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD						5,000	TBD	CONT.	CONT.	
Subtotal T&E	TBD	TBD						5,000	TBD	CONT.	CONT.	
Remarks												
Project Management	TBD	TBD						5,000	TBD	CONT.	CONT.	
Subtotal Management	TBD	TBD						5,000	TBD	CONT.	CONT.	
Remarks												
Total Cost	TBD	TBD						39,722	TBD	TBD	CONT.	

R-1 Shopping List -Item No. 45 - 8 of 8

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Exhibit R-3, PROJECT COST ANALYSIS

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY: 4 RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY				R-1 ITEM NOMENCLATURE 0603254N ASW System Development							
COST (\$ in Millions)			FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost			10.053	1.975	0.000	0.000	0.000	0.000	0.000	0.000	96.075
V0968 MK 30 Target Development			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.029
Q0968 MK 30 Target Development			10.053	1.975	0.000	0.000	0.000	0.000	0.000	0.000	12.028
Quantity of RDT&E Articles			2								
<p>A. Mission Description and Budget Item Justification</p> <p>This project develops the next generation fleet Anti-Submarine Warfare (ASW) Target. The mission of the MK30 Mod 2 ASW Training Target System is to provide cost-effective ASW training for Navy platforms (surface ships, submarines, and aircraft) by using a highly reliable and maintainable unmanned undersea vehicle to simulate the dynamics, acoustics, and magnetic signatures of submarines and act as a target for the ASW sensors and torpedoes to detect, classify, track, and pursue in a realistic, operational training environment.</p> <p>The MK30 Mod 2 program will design, develop and test 2 Engineering Development Model (EDM) units. Fabrication of the EDM units will be completed in FY00 to support Developmental Testing and Operational Testing through FY01 in accordance with the program schedule.</p> <p>The target will be capable of simulating the Russian and Rest of the World (ROW) submarine threats anticipated in the twenty-first century littoral warfare environment with the degree of simulation fidelity required for effective ASW training, especially simulation of the shallow water, slower speed and conventionally powered submarine.</p> <p>PROGRAM ACCOMPLISHMENTS AND PLANS</p> <p>1. (U) FY 2001 Accomplishments:</p> <p>(U) (1.752) Completed Test and Evaluation (DT-IIE,F). Perform contractor and Government Operational-style Engineering Development Model (EDM) In-water testing.</p> <p>(U) (.200) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.</p> <p>(U) (8.101) Update Technical Data Package, continue Logistics Planning, and prepare for Milestone III review.</p>											

R-1 SHOPPING LIST - Item No. 46-1 of 46-6

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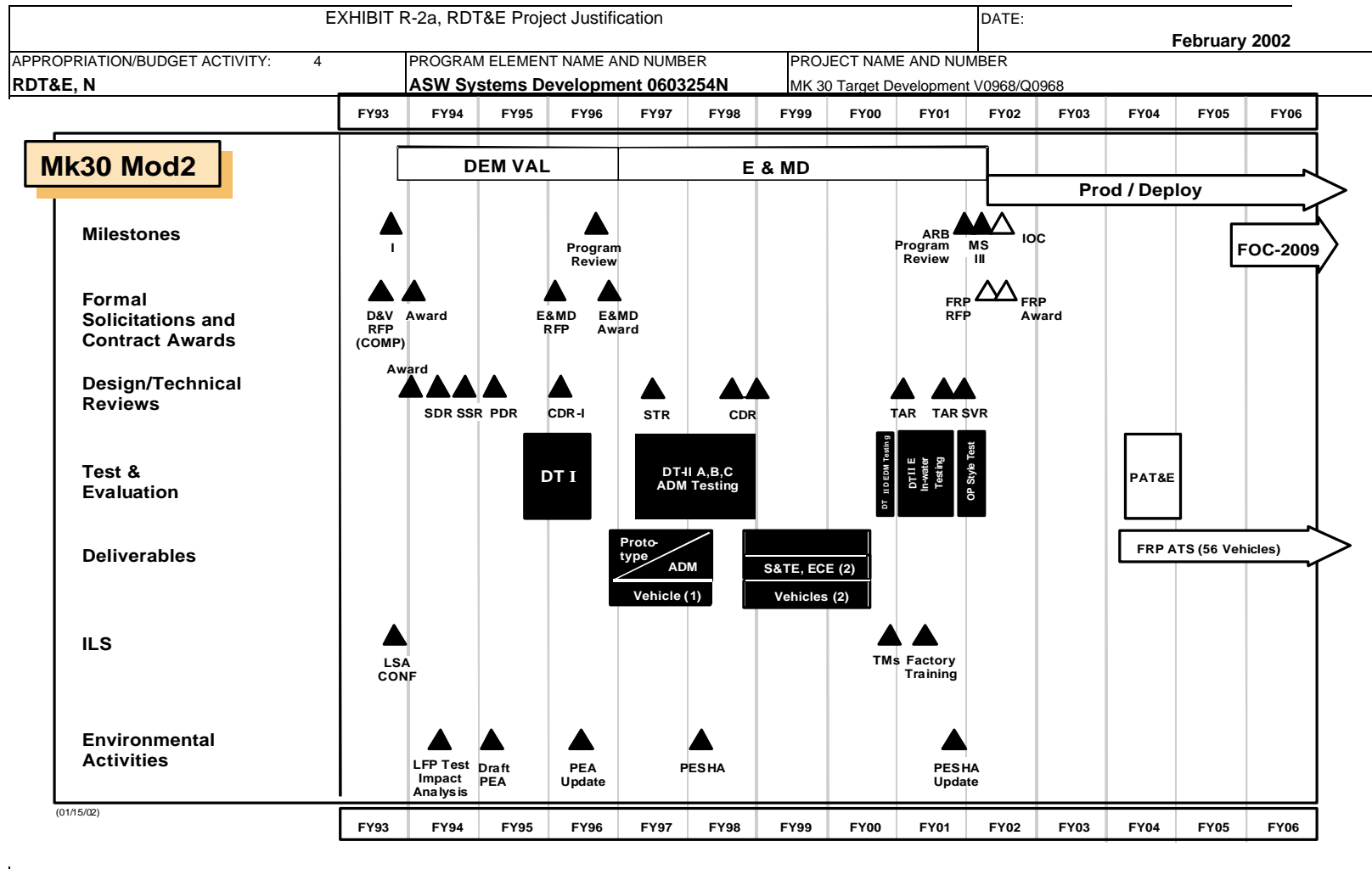
EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002																																																	
APPROPRIATION/BUDGET ACTIVITY: 4 RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY					R-1 ITEM NOMENCLATURE MK 30 Target Development V0968/Q0968																																																		
<p>2. (U) FY 2002 Plan:</p> <p>(U) (1.975) Complete E&MD phase.</p> <p>B. (U) Program Change Summary</p> <table style="width: 100%; margin-top: 10px;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: right;">10.251</td> <td style="text-align: right;">1.993</td> <td style="text-align: right;">0</td> </tr> <tr> <td>(U) Adjustment to FY 2001/2002</td> <td style="text-align: right;">10.375</td> <td style="text-align: right;">1.993</td> <td></td> </tr> <tr> <td> Appropriated Value/FY 2002</td> <td></td> <td></td> <td></td> </tr> <tr> <td> President's Budget</td> <td style="text-align: right;">- 0.322</td> <td style="text-align: right;">-.018</td> <td></td> </tr> <tr> <td>(U) FY 2003 President's Budget Submit:</td> <td style="text-align: right;">10.053</td> <td style="text-align: right;">1.975</td> <td style="text-align: right;">0</td> </tr> </tbody> </table> <p>Funding FY 2001 reduction of - 101 Sec. 8086, .7% pro rata, - 0.23 Govt. Wide Rescission, -.200 FY01 SBIR, + 2 01 Actuals. FY 2002 - .018 is due to Sec. 8123 Management Reform. Schedule: MK-30 MS III approval granted in January 2002; IOC rescheduled from from March 02 to June 02. Technical: Not applicable</p> <p>C. Other Program Funding Summary:</p> <table style="width: 100%; margin-top: 10px;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> <th style="text-align: center;"><u>FY 2004</u></th> <th style="text-align: center;"><u>FY 2005</u></th> <th style="text-align: center;"><u>FY 2006</u></th> <th style="text-align: center;"><u>FY 2007</u></th> <th style="text-align: center;"><u>To Complete</u></th> <th style="text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>WPN: Line Item 314100</td> <td style="text-align: right;">1.147</td> <td style="text-align: right;">11.911</td> <td style="text-align: right;">11.446</td> <td style="text-align: right;">23.499</td> <td style="text-align: right;">24.112</td> <td style="text-align: right;">24.596</td> <td style="text-align: right;">25.134</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> </tbody> </table> <p>D. Acquisition Strategy: The E&MD contract was awarded to Raytheon Systems Portsmouth, RI on a sole source basis, as a follow-on to the Demonstration/Validation contract which was won by Raytheon in a competitive source selection. The first two years of production will be sole source to Raytheon.</p> <p>E. Schedule Profile: See next page.</p>									<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	(U) FY 2002 President's Budget:				(U) Appropriated Value:	10.251	1.993	0	(U) Adjustment to FY 2001/2002	10.375	1.993		Appropriated Value/FY 2002				President's Budget	- 0.322	-.018		(U) FY 2003 President's Budget Submit:	10.053	1.975	0		<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>	WPN: Line Item 314100	1.147	11.911	11.446	23.499	24.112	24.596	25.134	CONT.	CONT.
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>																																																				
(U) FY 2002 President's Budget:																																																							
(U) Appropriated Value:	10.251	1.993	0																																																				
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(U) FY 2003 President's Budget Submit:	10.053	1.975	0																																																				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>																																														
WPN: Line Item 314100	1.147	11.911	11.446	23.499	24.112	24.596	25.134	CONT.	CONT.																																														

R-1 SHOPPING LIST - Item No. 46-2 of 46-6

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R-1 SHOPPING LIST - Item No. 46-4 of 46-6

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY: 4			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			ASW Systems Development 0603254N			MK 30 Target Development V0968/Q0968						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development (D&V)	C/CPAF	Raytheon Systems, Portsmouth, RI	24.745	0.000	N/A	0.000	N/A	0.000	N/A	0.000	24.745	24.745
Primary Hardware Development (E&MD)	C/CPAF	Raytheon Systems, Portsmouth, RI	32.697	7.413	10/00	1.825	10/01	0.000	N/A	0.000	41.935	39.314 (Base)
Ancillary Hardware Development (Battery Development)	WR	NUWC Newport, RI	4.654	0.000	N/A	0.000	N/A	0.000	N/A	0.000	4.654	N/A
Technical Direction Agent	WR	NUWC Newport, RI	14.401	0.717	10/00	0.150	10/01	0.000	N/A	0.000	15.268	N/A
ILS Agent	WR	NUWC Keyport, WA	0.170	0.197	10/00	0.000	N/A	0.000	N/A	0.000	0.367	N/A
Subtotal Product Development			76.667	8.327		1.975		0.000		0.000	86.969	
Remarks: E&MD Total Cost includes Engineering Services.												
Program Management Support	SS/CPFF	RPI/Vredenburg/Anteon	3.139	0.000	10/00	0.000	N/A	0.000	N/A	0.000	3.139	
Travel	PD	Various	2.690	0.166	10/00	0.000	N/A	0.000	N/A	0.000	2.856	
Subtotal Support			5.829	0.166		0.000		0.000		0.000	5.995	
Remarks:												

R-1 SHOPPING LIST - Item No. 46-5 of 46-6

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R-1 SHOPPING LIST - Item No. 46-6 of 46-6

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						0603261N Tactical Airborne Reconnaissance					
COST (\$ in Millions)	Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost			2.334*	1.934	1.922	1.921	11.493	11.517	11.545	Continuing	Continuing
A2467 UAV CONOPS			2.334*	1.934	1.922	1.921	11.493	11.517	11.545	Continuing	Continuing
Quantity of RDT&E Articles Not Applicable											
* The FY 01 budget reflects a \$0.400M Congressional Add for spares procurement for the Predator exected under A2851, which has been decreased by \$0.003M for Congressional Reductions.											
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for the development of studies, analyses and demonstrations for Unmanned Aerial Vehicle (UAV) concept of operation (CONOP) development. UAV CONOPS Research: The efforts supported under this program provide studies of CONOPS for UAV integration into USN Battlespace Dominance Operations. CONOPS research will evaluate the roles UAV's play in network centric warfare, sensor-to-shooter, and time critical strike (TCS). Areas of interest include the joint utility Global Hawk (LVL II-IV) integration into carrier battle group operations. The lessons learned from this research directly support the development of DoN requirements for UAVs.											
(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental test related to specific ship or aircraft applications.											

R-1 SHOPPING LIST - Item No. 47

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4		0603261N Tactical Airborne Reconnaissance				A2467 UAV CONOPS Research						
COST (\$ in Millions)		Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost				2.334	1.934	1.922	1.921	11.493	11.517	11.545	Continuing	Continuing
RDT&E Articles Qty Not Applicable												
<p>* The FY 01 budget reflects a \$0.400M Congressional Add for spares procurement for the Predator exected under A2851; which has been decreased by \$0.003M for Congressional Reductions.</p> <p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides funding for concept of operations (CONOPS) development, research and studies in the integration of Unmanned Aerial Vehicles (UAVs) into Naval Strike Warfare. The efforts supported under this program provide studies of CONOPS for UAV integration into USN Battlespace Dominance Operations. Specifically, the CONOPS research will evaluate the roles UAV's play in network centric warfare, sensor-to-shooter, and time critical strike. Areas of interest include the joint utility of Global Hawk (LVL II-IV) and Predator (LVL IV) integration into carrier battle group operations.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> (U) (\$1.937) Developed CONOPS via integration of Navy, Predator and Pioneer assets into three Carrier Airwing Deployments (CVW-1, CVW-9, and CVW-7) exploring UAV employment in the mission areas of Overland Strike, Close Air Support, Expeditionary Operations, Combat Search and Rescue, and Non-Combatant Evacuation Operations. Provided Navy Predator and the Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS)support for UAV CONOPS efforts in two Naval Warfare Development Center sponsored tactical development exercises: Decisive Suppression Enemy Air Defense (SEAD) and "UAV Operations in Support of Battlespace Dominance." Provided essential input to Navy UAV program planning via the Naval UAV Executive Steering Group and UCAV-N Science &Technology demo activities. (U) (\$0.397) Predator Spares Buy. <p>2. FY 2002 PLANS:</p> <ul style="list-style-type: none"> (U) (\$1.934) Continue studies and demonstrations for CONOPS development into Naval Strike Warfare. <p>3. FY 2003 PLANS:</p> <ul style="list-style-type: none"> (U) (\$1.922) Continue studies and demonstrations for CONOPS development into Naval Strike Warfare. 												

R-1 SHOPPING LIST - Item No. 47

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA - 4	PROGRAM ELEMENT NUMBER AND NAME 0603261N Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME A2467 UAV CONOPS Research																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;"><u>FY2001</u></th><th style="text-align: center;"><u>FY2002</u></th><th style="text-align: center;"><u>FY2003</u></th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">2.332</td><td style="text-align: center;">1.934</td><td></td></tr><tr><td>(U) Adjustments from the FY 2002 President's Budget:</td><td style="text-align: center;">0.002</td><td style="text-align: center;">0.000</td><td></td></tr><tr><td>(U) FY2003 President's Budget Submit:</td><td style="text-align: center;">2.334</td><td style="text-align: center;">1.934</td><td style="text-align: center;">1.922</td></tr></tbody></table> <p>CHANGE SUMMARY EXPLANATION:</p> <p style="margin-left: 40px;">(U) Funding: FY 2001 net increase of \$0.002 million for CONOPS Studies .</p> <p style="margin-left: 40px;">(U) Schedule: N/A</p> <p style="margin-left: 40px;">(U) Technical: N/A</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY: N/A</p> <p>(U) D. ACQUISITION STRATEGY: N/A</p> <p>(U) E. SCHEDULE PROFILE: N/A</p>				<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:	2.332	1.934		(U) Adjustments from the FY 2002 President's Budget:	0.002	0.000		(U) FY2003 President's Budget Submit:	2.334	1.934	1.922
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>															
(U) FY 2002 President's Budget:	2.332	1.934																
(U) Adjustments from the FY 2002 President's Budget:	0.002	0.000																
(U) FY2003 President's Budget Submit:	2.334	1.934	1.922															

R-1 SHOPPING LIST - Item No. 47

UNCLASSIFIED

Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 3 of 5)

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603261N Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME A2467 UAV CONOPS Research						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
CONOPS Development	WX	NSAWC, Fallon Nevada	1.956	1.937	11/00	1.934	12/01	1.922	12/02	Continuing	Continuing	
Predator Spares *	WX	NPGS Monterey, CA		0.397	02/01						0.397	
Subtotal Product Development			1.956	2.334		1.934		1.922		Continuing	Continuing	
Remarks: * Congressional Add for Spares procurement for Predators.												
Subtotal Support												
Remarks:												

R-1 SHOPPING LIST - Item No. 47

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603261N Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME A2467 UAV CONOPS Research						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks:												
Subtotal Management												
Remarks:												
Total Cost			1.956	2.334		1.934		1.922		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 47

UNCLASSIFIED

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER ADV COMBAT SYS TECH/0603382N				R-1 ITEM NOMENCLATURE Advanced Combat System Technology /0603382N				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	6.600	3.427	3.350	3.574	3.524	2.070	1.124	CONT.	CONT.
Advanced Combat System Technology/K0324	6.600	3.427	3.350	3.574	3.524	2.070	1.124	CONT.	CONT.
Quantity of RDT&E Articles	Not Applicable								

A. (U) Mission Description and Budget Item Justification

The Advanced Combat System Technology line funds studies and experiments that are conducted in distributed computer architecture, radar technology, and Tactical Informational Management (TIM) Concepts in the Computing Testbed to mature them as transition candidates for introduction into the AEGIS Weapon System (AWS). This program takes a disciplined systems engineering approach to find how these advances can be integrated into the AEGIS system and subsequent combat systems, and to plan combat system baseline upgrade schedules. Fully Distributed Computing Architecture is the first advanced development effort, leveraging the joint AEGIS/Defense Advanced Research Projects Agency (DARPA) High Performance Distributive Computing (Hiper-D) technology effort. It implements the results of system engineering experiments with currently emerging Commercial-off-the-Shelf (COTS) computer technologies and distributed processing advances to replace the current AEGIS Combat System (ACS) architecture with an open, distributed architecture planned for introduction in Baseline 7 Phase II. A significant priority of task will be complex TIM of the flow and display of tactical information through the "detect-control-engage" process to better support the operator/decision maker. These advanced technologies are candidate systems for future baseline upgrades.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY01 ACCOMPLISHMENTS:

- (U) (\$1.358) Continued system engineering experiments with currently emerging COTS and DARPA computer technologies to assess their applicability in meeting ACS performance requirements and open system architecture objectives. Provided feedback on any existing shortfalls for future enhancements. Worked within the commercial standards communities to address the shortfalls in computing capabilities for Navy applications.
- (U) (\$3.097) Conducted an integrated demonstration in the Computing Testbed of selected AWS capabilities focused on transitioning them to the target Distributed Tactical Computing Environment (DTCE), based on emerging COTS technologies and DARPA Quality of Service (QoS) technologies (attributes included: portability, scalability, fault tolerance and dynamic resource management).
- (U) (\$.984) Continued integration of lessons learned in the FY00 DTCE risk reduction experiments, whose technologies include resource management, networking, operating systems, and middleware targeted at the ACS. Worked with baseline development teams to identify emerging issues associated with transitioning to baselines 6.3, 7.1 and cruiser conversion baselines to an open architecture based on these technologies.

R-1 SHOPPING LIST - Item No. 48-1 of 48-4

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 1 of 4)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER ADV COMBAT SYS TECH/0603382N	R-1 ITEM NOMENCLATURE Advanced Combat System Technology /0603382N
<p>- (U)FY01 ACCOMPLISHMENTS CONT:</p> <p>- (U) (\$0.961) Developed an approach to certify AWS based on dynamically allocated system functions – critical to certifying operational combat system programs based on these technologies.</p> <p>- (U) (\$0.200) Assessed system engineering and development tools and provided feedback to AEGIS program and prime contractor.</p> <p>- (U) FY02 PLAN:</p> <p>- (U) (\$0.385) Continue development and integration of DTCE capability based on COTS and DARPA technologies.</p> <p>- (U) (\$1.955) Conduct experiments focused on transition of selected AWS elements to the DTCE and document lessons learned with respect to performance and open system attributes. Mature certification methodologies and develop trial certification procedures.</p> <p>- (U) (\$0.087) Provide feedback to DARPA and to the AEGIS prime contractor for incorporation into baseline developments.</p> <p>- (U) (\$1.000) Assess capability of DTCE to meet projected requirements of future baseline upgrades and missions, e.g. Area and Navy Theatre Wide (NTW) Theatre Ballistic Missile Defense (TBMD).</p> <p>(U) FY03 PLAN:</p> <p>- (U) (\$1.800) Continue to conduct experiments focused on assessing advanced technologies for applicability to the AWS. Technologies to be assessed include emerging software technologies (including developmental tools, environments and design patterns), distributed data communications technologies, QoS middleware and architectures, operating system technologies and networking technologies. These experiments will be focused on support for the AEGIS Open Architecture initiative (Baseline 7 Phase II) in order to provide guidance and implement lessons learned from the advanced computing testbed.</p> <p>- (U) (\$0.100) Work with Science & Technology (S&T) communities (e.g. DARPA and Office of Naval Research (ONR)) to provide challenge domain problems on which to focus investment and validation of candidate technologies against these challenge domain problems. Provide engineering quality lessons learned and benchmarking information back to S&T sponsors and technology developers for enhancements.</p> <p>- (U) (\$0.200) Continue development and integration of DTCE capability based on advanced hardware and software technologies emerging from computing industry providers.</p> <p>- (U) (\$0.300) Address the information security needs for the AWS. Based on the rapidly evolving COTS components, define and validate architectural approaches to providing information security. Identify candidate technologies and make assessments of maturity for adopting or adapting these into the AWS in future upgrades.</p> <p>- (U) (\$0.950) Explore techniques to enable enhanced weapons employment based on sensor netting of SPY-1 with other remote sensors. Explore techniques to enable C&D and Weapons Control Systems (WCS) to perform distributed weapons employment using external links to support the information exchange between AWS's on other platforms and other weapon systems as well.</p>		

R-1 SHOPPING LIST - Item No. 48-2 of 48-4

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 4)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			R-1 ITEM NOMENCLATURE				
RDT&E, N / BA 4		ADV COMBAT SYS TECH/0603382N			Advanced Combat System Technology /0603382N				

Program Change Summary:	FY 2001	FY 2002	FY 2003
FY 2002 President's Budget	6.879	3.458	
Appropriated Value:	6.943	3.458	
Adjustments to FY 2001/2002 Appropriated Value/	-0.343	-0.031	
FY 2002 President's Budget			
FY 2003 Pres Budget Submit:	6.600	3.427	3.350

FY01: Funding change is due to reductions for Small Business Innovative Research (SBIR) (-\$0.126), a Below Threshold Reprogramming (BTR) to AIEWS (-\$0.136), and Minor Pricing Adjustments (-\$.081).

FY02: Funding change to minor Pricing Adjustments (-\$.031).

Schedule: Not applicable.

Technical: Not applicable.

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
RDT&E, N / 1319 / BA 5									
PE0604307N	184.843	326.625	300.748	212.601	189.352	215.402	173.220	CONT.	CONT.

C. Acquisition Strategy: Risk reduction efforts are lead by NSWC/DD, the ACS Lifetime Support Engineering Agent (LSEA). Results are transitioned to industry for cost and risk mitigation in the production of ACS.

D. Schedule Profile: Not Applicable

R-1 SHOPPING LIST - Item No. 48-3 of 48-4

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 3 of 4)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)									DATE:		February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER:							
RDT&E, N / BA 4			ADV COMBAT SYS TECH/0603382N			Advanced Combat System Technology /K0324							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Systems Engineering	SS/CPFF	APL, Baltimore, MD	7.579	1.710	11/00	0.866	11/01	0.759	11/02	CONT.	CONT.		
Systems Engineering	WR	NSWC, Dahlgren, VA	9.905	4.500	12/00	2.241	12/01	2.241	12/02	CONT.	CONT.		
Systems Engineering	WR	NAWCAD, St. Inigoes, MD	2.000							CONT.	CONT.		
Subtotal Product Development			19.484	6.210		3.107		3.000		CONT.	CONT.	0.000	
Remarks:													
Support	WR	Miscellaneous	0.405	0.055	11/00	0.041	11/01	0.072	11/02	CONT.	CONT.		
Subtotal Support			0.405	0.055		0.041		0.072		CONT.	CONT.		
Remarks:													
Test & Evaluation	WR	Miscellaneous	0.315	0.056	11/00	0.000	11/01	0.000	11/02	CONT.	CONT.		
Subtotal T&E			0.315	0.056		0.000		0.000		CONT.	CONT.		
Remarks:													
Program Management Support	WR	Miscellaneous	0.443	0.279	11/00	0.279	11/01	0.278	11/02	CONT.	CONT.		
Subtotal Management			0.443	0.279		0.279		0.278		CONT.	CONT.		
Remarks:													
Total Cost			20.647	6.600		3.427		3.350		CONT.	CONT.		

R-1 SHOPPING LIST - Item No. 48-4 of 48-4

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 4 of 4)

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE Surface and Shallow Water Mine Countermeasure/0603502N					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		103.114	140.115	155.016	75.566	59.401	80.681	137.540	CONT.	CONT.
Remote Minehunting System/Q0260/Q2387		42.867	58.642	61.452	47.833	20.300	0.000	0.000	CONT.	CONT.
Integrated Combat Weapons System/Q1233/Q2388		17.052	14.619	12.758	6.501	6.216	5.703	5.337	CONT.	CONT.
Unmanned Underwater Vehicle/Q2094/Q2852		31.529	61.619	76.108	16.421	22.979	54.845	102.961	CONT.	CONT.
Shallow Water Mine Countermeasure/Q2131		11.666	5.235	4.698	4.811	9.906	20.133	29.242	CONT.	CONT.
Quantity of RDT&E Articles										
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 DDG-51 Class and other surface combatants; (2) the integration and improvement of systems and support for systems which will detect, localize and classify moored, bottom, and close-tethered mines for use in Mine Countermeasure (MCM) MCM-1 Class, Mine Hunter Coastal (MHC) MHC-51 Class, and other surface ships; (3) systems for neutralizing mines and light obstacles from shallow water, very shallow water, surf zones, and beach landing craft zones in support of amphibious operations; (4) near-term and long-term Unmanned Undersea Vehicle (UUV) systems for clandestine mine reconnaissance.										
B. Program Change Summary:		FY 2001	FY 2002	FY 2003						
FY 2002 President's Budget:		101.984	135.284	124.519						
Appropriated Value		102.929	141.384							
Adjustments to FY 2001/2002 Appropriated Value/										
FY2002 President's Budget:		0.185	-1.269	30.497						
FY 2003 President's Budget Submit:		103.114	140.115	155.016						
Funding: FY01: (+0.185M) Other Adjustments. FY02: (-1.249M) Management Reform Initiative; (-.020M) FFRDC. FY03: (-3.600M) Non SQQ-89 RMS termination; (+.663M) OMN re-alignment to RDT&E (UUV); (+5.000M) Sponsor Issue (UUV); (-8.700M) ABS re-structure; (-.195M) Syscom reduction (UUV); (-.528M) contract support; (-.378M) BSO realignment residual issues 64000; (-.945M) PBD 404 Carryover NSWC/NUWC; (-.888M) PBD 604 Nonpay Inflation; (+.068M) rate adjustments; and (+40.000M) PBD-130C Unmanned Underwater Vehicle.										
Schedule: RMS - Changed to reflect specific T&E Milestones (TECHEVAL Phase I, Phase II & OPEVAL), accurately reflect post-CDR current contract efforts and the preparation & conduct DT/OT.										
Technical: Not Applicable.										

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 32)

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CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N			PROJECT NAME AND NUMBER Remote Minehunting Systems/Q0260/Q2387					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		42.867	58.642	61.452	47.833	20.300	0.000	0.000	CONT.	CONT.
RDT&E Articles Qty										
<p>A. Mission Description and Budget Item Justification: The Remote Minehunting System (RMS), AN/WLD-1(V), program develops a new remotely operated minehunting system for surface ships. This effort includes development and integration of a remote vehicle, mine-hunting sensors, mission command and control, and installation into the DDG-51 Class Flight IIA Baseline 7 and AN/SQQ-89(V)15 Undersea Warfare Combat System.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS</p> <p>Product Development</p> <ul style="list-style-type: none"> - (U) (\$11.824) Primary Hardware Development - Completed Preliminary and Continued Critical Design and fabrication of Engineering Development Models (EDMs) for the RMS. - (U) (\$ 3.800) System Engineering - Continued System Engineering for the RMS EDMs including completion of PDR and continued Critical Design Support. - (U) (\$ 1.230) Award Fees - Incentive Fee for L&R subsystem CDR. <p>Development Support</p> <ul style="list-style-type: none"> - (U) (\$ 4.083) Software Development-Continued software design/Code/Test for the RMS. - (U) (\$ 4.000) Integrated Logistic Support - Continued ILS Planning and IETM Development for RMS. - (U) (\$ 6.400) Ship Integration - Continued Integration Support for the RMS on DDG51 Flight IIA ship including support for AN/SQQ-89(V)15 ECP. <p>Test and Evaluation</p> <ul style="list-style-type: none"> - (U) (\$ 7.500) Developmental Test and Evaluation - Continued RMS Critical Item Testing (CIT). <p>Support</p> <ul style="list-style-type: none"> - (U) (\$3.970) Program Management Support - (U) (\$.060) Travel 										

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 2 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N	Remote Minehunting Systems/Q0260/Q2387
<p>2. (U) FY 2002 PLAN</p> <p>Product Development</p> <ul style="list-style-type: none"> - (U) (\$20.804) Primary Hardware Development - Complete Critical Design and continue fabrication of Engineering Development Models (EDMs) for the RMS. - (U) (\$ 3.900) System Engineering - Continue System Engineering for the RMS EDMs including supporting Critical Design Review. - (U) (\$ 1.809) Award Fees - Incentive Fee for CDR. <p>Development Support</p> <ul style="list-style-type: none"> - (U) (\$ 5.100) Software Development - Continue software design/Code/Test for the RMS. - (U) (\$ 6.200) Integrated Logistic Support - Continue ILS Planning and IETM Development for RMS. - (U) (\$ 2.200) Ship Integration - Continue Integration Support for the RMS on DDG51 Flight IIA ship including support for AN/SQQ-89(V)15 ECP. <p>Test and Evaluation</p> <ul style="list-style-type: none"> - (U) (\$ 11.740) Developmental Test and Evaluation - Begin test preparation for DT/OA for the RMS Shipboard Equipment. <p>Support</p> <ul style="list-style-type: none"> - (U) (\$6.829) Program Management Support - (U) (\$.060) Travel <p>3. (U) FY 2003 PLAN</p> <p>Product Development</p> <ul style="list-style-type: none"> - (U) (\$36.229) Primary Hardware Development - Complete fabrication of Engineering Development Models (EDMs) for the RMS and begin Pilot Line Proofing of system hardware. - (U) (\$2.600) System Engineering - Continue System Engineering for the RMS EDMs. <p>Development Support</p> <ul style="list-style-type: none"> - (U) (\$4.000) Software Development - Continue software design/Code/Test for the RMS. - (U) (\$2.200) Integrated Logistic Support - Continue ILS Planning and IETM Development for RMS. - (U) (\$.700) Ship Integration - Continue Integration Support for the RMS on DDG51 Flight IIA ship including support for AN/SQQ-89(V)15 ECP. <p>Test and Evaluation</p> <ul style="list-style-type: none"> - (U) (\$8.600) Developmental Test and Evaluation - Complete test preparation and conduct DT/OA for the RMS Shipboard Equipment <p>Support.</p> <ul style="list-style-type: none"> - (U) (\$7.063) Program Management Support - (U) (\$.060) Travel 		

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 32)

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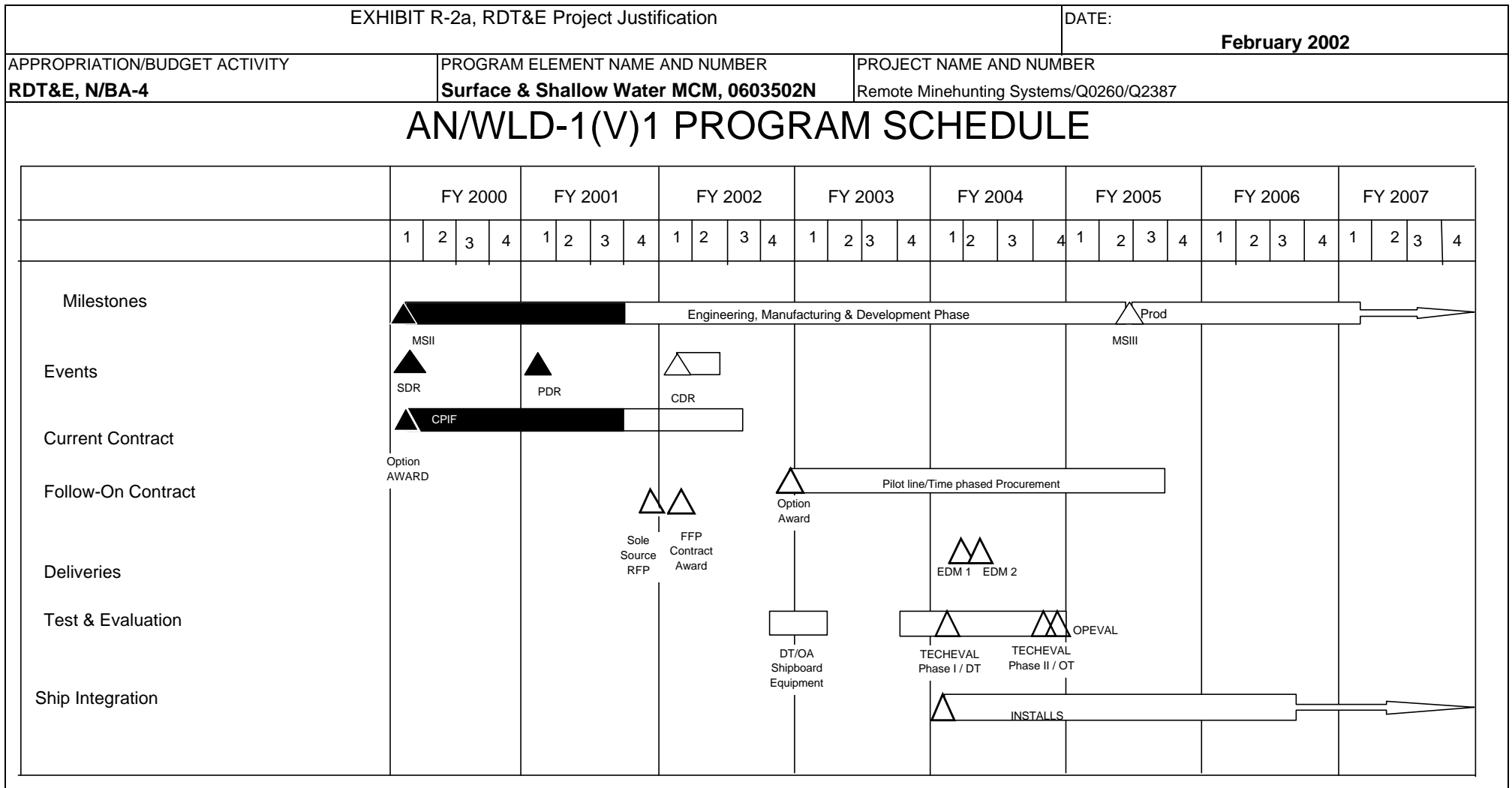
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Remote Minehunting Systems/Q0260/Q2387							
B. OTHER PROGRAM FUNDING SUMMARY									
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO COMPLETE	TOTAL COST
(U) OPN RMS Line 262200	0.000	0.000	0.000	0.000	34.563	35.138	94.691	CONT.	CONT.
(U) RDT&E PE 0604373 Q0529	17.625	11.148	16.045	5.536	0.000	0.000	0.000	0.000	50.354
C. Acquisition Strategy: The government has issued a series of contract modifications to Lockheed Martin to complete efforts through the System Design Review. Based upon the approved Milestone II decision the program office issued the contract modification to complete the Critical Design Review (CDR); upon completion of CDR a firm fixed price sole source contract will be awarded to Lockheed Martin to complete the development, fabrication, and testing of the engineering development models, initial pilot line/tooling, and timed phased procurement of initial systems to meet ship delivery schedules. The government has worked with the contractor in an IPT environment to refine the specification and Statement of Work for the overall development effort. The IPT pricing process was used to generate the cost estimates against Navy requirements. The government will pursue commonality between the AN/ AQS-20X airborne minehunting system and the AN/WLD-1(V)1. The AN/WLD-1(V)1 contract plan is for the development of two (2) EDMs, system interactive electronic technical manual (IETM), provisioning data, technical drawings and data, and engineering services.									
D. Schedule Profile: See Attached									

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 5 of 32)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N , BA-4			Surface & Shallow Water MCM, 0603502N			Remote Minehunting System/Q0260/Q2387						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF/IF	Lockheed Martin	131.372	10.324	11/00	7.722	11/01			CONT.	CONT.	N/A
Primary Hardware Development	SS/FFP	Lockheed Martin				11.582	11/01	34.429	11/02	CONT.	CONT.	N/A
Primary Hardware Development	WR	NSWC, CSS	1.100	1.500	12/00	1.500	12/01	1.800	12/02	CONT.	CONT.	
Systems Engineering	C/CPFF/IF	Lockheed Martin	3.900	3.200	11/00	1.440	11/01			CONT.	CONT.	
Systems Engineering	SS/FFP	Lockheed Martin				2.160	11/01	2.300	11/02	CONT.	CONT.	
Systems Engineering	WR	NSWC, CSS	0.200	0.600	12/00	0.300	12/01	0.300	12/02	CONT.	CONT.	
GFE												
Award Fees			6.482	1.230	05/01	1.809	03/02			N/A	N/A	N/A
Subtotal Product Development			143.054	16.854		26.513		38.829				
Remarks: GFE - AN/AQS-20 systems provided to RMS program were funded under PE 0604373/Q0529												
Development Support Equipment												
Software Development	C/CPFF/IF	Lockheed Martin	5.902	3.433	11/00	1.800	11/01			CONT.	CONT.	
Software Development	SS/FFP	Lockheed Martin				2.700	11/01	3.800	11/02	CONT.	CONT.	
Software Development	WR	NSWC, CSS	0.901	0.650	12/00	0.600	12/01	0.200	12/02	CONT.	CONT.	N/A
ILS	C/CPFF/IF	Lockheed Martin	2.800	3.700	11/00	2.360	11/01			CONT.	CONT.	
ILS	SS/FFP	Lockheed Martin				3.540	11/01	2.100	11/02	CONT.	CONT.	
ILS	WR	NSWC, CSS	1.600	0.300	12/00	0.300	12/01	0.100	12/02	CONT.	CONT.	N/A
Ship Integration	C/CPFF	Lockheed Martin	0.200	1.300	11/00	0.440	11/01			CONT.	CONT.	
Ship Integration	SS/FFP	Lockheed Martin				0.660	11/01	0.400	11/02	CONT.	CONT.	
Ship Integration**	Various	Various	9.201	5.100	12/00	1.100	12/01	0.300	12/02	CONT.	CONT.	
Subtotal Support			20.604	14.483		13.500		6.900		CONT.	CONT.	
Remarks: ** Various in Ship Integration provides funding to support AN/SQQ-89(V)15 ECP effort for RMS and PMS400 RMS DDG ship class integration efforts.												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 32)

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RD&E, N , BA-4			PROGRAM ELEMENT Surface & Shallow Water MCM, 0603502N			PROJECT NAME AND NUMBER Remote Minehunting Systems/ Q0260/Q2387						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPFF/IF	Lockheed Martin	19.379	6.500	11/00	4.096	11/01			CONT.	CONT.	N/A
Developmental Test & Evaluation	SS/FFP	Lockheed Martin				6.144	11/01	7.200	11/02	CONT.	CONT.	N/A
Developmental Test & Evaluation	WR	NSWC, CSS		1.000	12/00	1.500	12/01	1.400	12/02	CONT.	CONT.	
Tooling												
GFE												
Subtotal T&E			19.379	7.500		11.740		8.600		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	C/CPFF/IF	Lockheed Martin	4.500							0.000	4.500	
Government Engineering Support	WR	NSWC, CSS	34.600							0.000	34.600	N/A
Program Management Support	CPFF	Vredenburg	0.000	1.477	11/00	1.200	11/01	1.150	11/02	CONT.	CONT.	N/A
Program Management Support	Various	Various	5.883	2.493	Various	5.629	Various	5.913	Various	CONT.	CONT.	N/A
Travel	Various	NAVSEA	0.120	0.060	Various	0.060	Various	0.060	Various	CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			45.103	4.030		6.889		7.123		CONT.	CONT.	
Remarks: Award dates for management are various because multiple activities are receiving tasks at different times during the fiscal year.												
Total Cost			228.140	42.867		58.642		61.452		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 32)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N				PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		17.052	14.619	12.758	6.501	6.216	5.703	5.337	CONT.	CONT.
RDT&E Articles Qty		3 EDM								

Mission Description and Budget Item Justification: (1) Integrated Combat Weapon System (ICWS) is a series of major, incremental block upgrades to the current combat systems. It provides the MCM/MHC Class Ships an affordable and fully integrated combat weapons system which will improve mission execution efficiency, dramatically reduce life-cycle costs, and facilitate changes to meet future mission requirements. (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 minewarfare planning and evaluation tools and databases to the MCM Commander. (3) Organic MCM C4I connectivity to the rest of the fleet is provided through GCCS-M; design and implement MIW C4I Surveillance and Reconnaissance (C4ISR) architecture to fully integrate and optimize organic and dedicated systems within the Navy's C4ISR architecture; (4) MCS/MCM Ship Studies determine requirements for future surface-airborne mine countermeasures capabilities to meet the Navy's needs in countering sea mines.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS

(U) ICWS Block I

Product Development

- (U) (\$1.062) Primary Hardware Development - Continued hardware design for ICWS. Began EDM fabrication.

- (U) (\$3.500) Primary Hardware Development - Awarded option for fully ruggedized and qualified EDM for Mine Warfare Training Center (MWTC).

Development Support Equipment

- (U) (\$4.269) Software Development - Continued software design/code/test for ICWS. Conducted CDR and begin subsystem integration and test.

Support

- (U) (\$.670) Support - Program management support

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 8 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N	Integrated Combat Weapons System/Q1233/Q2388
<p>1. (U) FY 2001 ACCOMPLISHMENTS Continued (U) MEDAL Development Support Equipment - (U) (\$.750) Software Development - Configural minefield planning TDA - (U) (\$1.514) Software Development - Continued MEDAL software port to NT, and begin integration and testing on Build 8. Initiate development of Build 9. - (U) (\$.900) Software Development - Tactical Decision Aid (TDA) study Support - (U) (\$.256) Program Management Support</p> <p>(U) ORGANIC MCM C4I Product Development - (U) (\$2.975) System Engineering - Continued MUW C4ISR architecture/data requirements. Continue MUW data content standards characterization. Continue MOD/SIM effort. Support - (U) (\$.387) Program Management Support</p> <p>(U) MCS/MCM SHIP STUDIES Product Development - (U) (\$.428) System Engineering - Completed study of alternatives to replace or retain MCS-12 (USS INCHON). - (U) (\$.252) System Engineering - Completed study of alternatives for follow-on class of surface mine countermeasures ships. Support - (U) (\$.089) Program Management Support</p> <p>2. (U) FY 2002 PLANS (U) ICWS Block I Product Development - (U) (\$1.794) Primary Hardware Development - Continue hardware design for ICWS Development Support Equipment - (U) (\$5.294) Software Development - Complete software design/code/test for ICWS, complete subsystem integration and testing, and begin EDM 1 integration and testing. Support - (U) (\$1.425) Program management support</p>		

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 9 of 32)

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N	Integrated Combat Weapons System/Q1233/Q2388
<p>2. (U) FY 2002 PLANS continued</p> <p>(U) MEDAL Development Support Equipment - (U) (\$2.031) Software Development - Complete Build 8. Complete development of Build 9 and initiate integration and testing. Initiate the development of Build 10. Support - (U) (\$.344) Program Management Support</p> <p>(U) ORGANIC MCM C4I Product Development - (U) (\$3.192) System Engineering - Complete MUW data content standards characterization. Complete MUW C4ISR architecture/data requirements. Continue MOD/SIM effort. Initiate and implement Phase 1 of the design of MUW Network Centric Warfare database and support network. Initiate and complete MEDAL/TEDS integration, MUW network centric warfare collaborative planning tools, and MCM/MHC classified LAN integration design. Initiate organic/dedicated MUW tactics development. Begin planning and evaluation models/algorithms. Update C4I SR assessment plan. Support - (U) (\$539) Program Management Support</p> <p>2. (U) FY 2003 PLAN (U) ICWS Block I Product Development - (U) (\$.717) Primary Hardware Development - Complete hardware design for ICWS Development Support Equipment - (U) (\$5.039) Software Development - Complete EDM 1 integration and testing. Perform EDM 2 ship installation, training, integration, and testing. Begin EDM 3 schoolhouse integration and testing. Conduct TRR. Support - (U) (\$1.176) Program management support</p> <p>(U) MEDAL Development Support Equipment - (U) (\$2.228) Software Development - Complete integration and testing of Build 9. Complete the development of Build 10. Support - (U) (\$.428) Program Management Support</p>		

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 10 of 32)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002																															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N		PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388																																	
<p>3. (U) FY 2003 PLANS Continued</p> <p>(U) ORGANIC MCM C4I Product Development</p> <p>- (U) (\$1.882) System Engineering - Continue MOD/SIM effort. Continue organic/dedicated MUW tactics development. Initiate the development of thru sensor technology. Continue planning and evaluation of models/algorithms. Update C4ISR assessment plan. Initiate advanced MUW TDA development.</p> <p>Development Support Equipment</p> <p>- (U) (\$.800) Software Development - Complete the development of phase 1 MUW Network Centric Warfare database and support network.</p> <p>Support</p> <p>- (U) (\$.488) Program Management Support</p>																																					
<p>B. OTHER PROGRAM FUNDING SUMMARY</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> <th style="text-align: center;"><u>FY 2004</u></th> <th style="text-align: center;"><u>FY 2005</u></th> <th style="text-align: center;"><u>FY 2006</u></th> <th style="text-align: center;"><u>FY 2007</u></th> <th style="text-align: center;"><u>To Complete</u></th> <th style="text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) OPN (ICWS)</td> <td style="text-align: center;">5.437</td> <td style="text-align: center;">2.505</td> <td style="text-align: center;">1.425</td> <td style="text-align: center;">8.222</td> <td style="text-align: center;">10.151</td> <td style="text-align: center;">33.374</td> <td style="text-align: center;">46.753</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> <tr> <td>Line 262200</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>									<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>	(U) OPN (ICWS)	5.437	2.505	1.425	8.222	10.151	33.374	46.753	CONT.	CONT.	Line 262200									
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>																												
(U) OPN (ICWS)	5.437	2.505	1.425	8.222	10.151	33.374	46.753	CONT.	CONT.																												
Line 262200																																					
<p>C. ACQUISITION STRATEGY</p> <p>ICWS is a series of major incremental upgrades to the current systems. The original equipment manufacturers have teamed with the Navy to develop the changes. FY 00 through FY 03 tasks will be accomplished under Cost Plus Incentive Fee (CPIF) contract. Contract was awarded in FY00. MEDAL is an evolutionary program with a development cycle of one year per software build to coincide with GCCS-M build schedule.</p>																																					
<p>D. SCHEDULE PROFILE</p> <p>See attached</p>																																					

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 11 of 32)

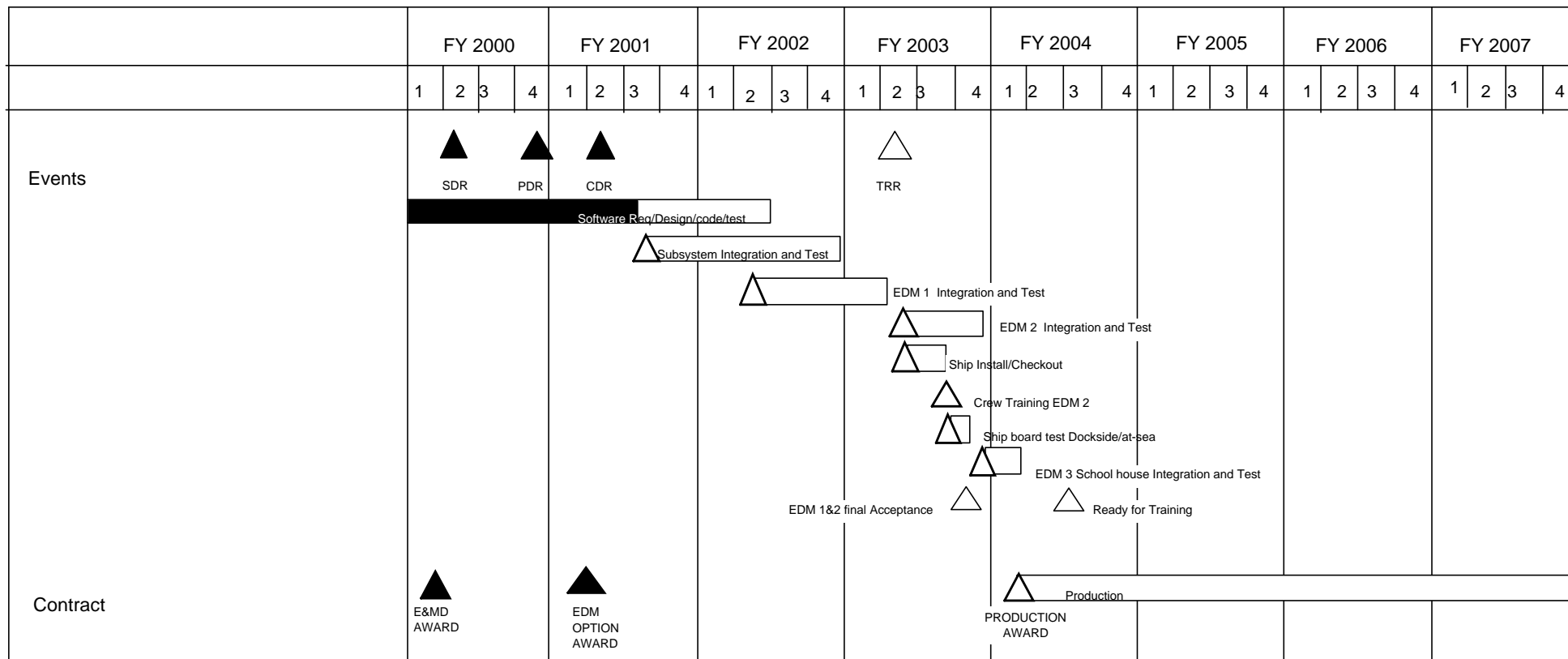
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388

ICWS BLOCK 1 PROGRAM SCHEDULE



R-1 SHOPPING LIST - Item No. 49

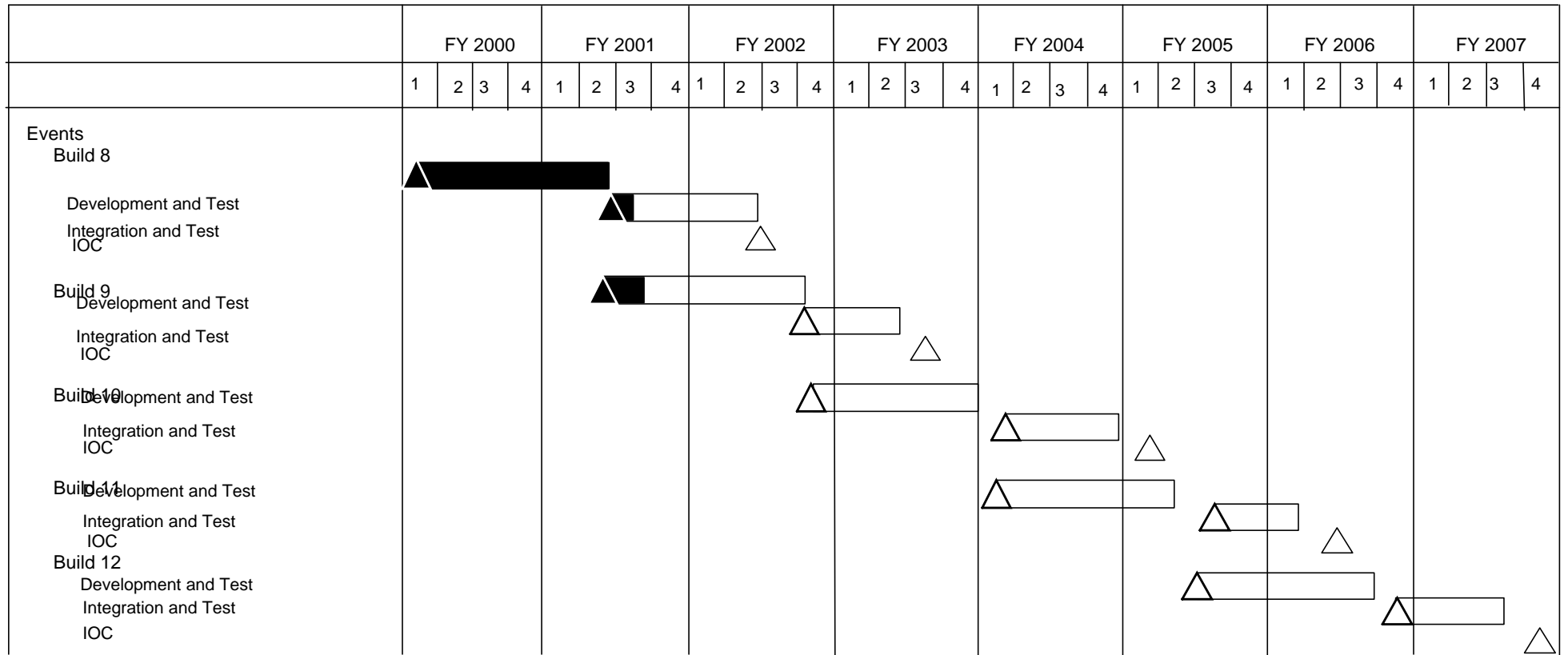
Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 12 of 32)

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N		PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388	

MEDAL PROGRAM SCHEDULE

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 13 of 32)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388

MUW C4ISR PROGRAM SCHEDULE

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
	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
Events								
MUW Information System Engineering effort. Modeling and Simulation	▲■■■							
MUW Data Content Standards Effort	▲■■■□							
C4ISR Architecture Development	▲■■■□							
MEDAL/TEDS Integration			▲□					
Advanced MUW Tactical Decision Aid Development				▲□				
MUW Network Centric Warfare Database				▲□				
					Implementation Ph I			
					Implementation Ph			
					Database Maintenance/Update/Redesign			
MUW Network Centric Warfare Info System Network					Shorebased Network			
MUW Network Centric Warfare Collaborative Planning Tool Design			▲□					

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 14 of 32)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4				PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N				PROJECT NAME AND NUMBER Integrated Combat Weapons System/Q1233/Q2388			

MUW C4ISR PROGRAM SCHEDULE CONT'D

	FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005				FY 2006				FY 2007			
	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
Events cont'd																																
Organic/Dedicated MUW Tactics Development																																
Planning & Evaluation Models/Algorithms																																
MCM/MHC Classified LAN Integration Design																																
Develop TEDS/PBU Thru Sensor Technology																																
C4ISR Assessment Plan Update																																

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 15 of 32)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4				Surface & Shallow Water MCM/0603502N			Integrated Combat Weapons System/Q1233/Q2388					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	Raytheon, RI	2.960							0.000	2.960	N/A
Primary Hardware Development	SS/FFP	Lockheed / Raytheon, RI		2.690	11/00	0.794	11/01			CONT.	CONT.	N/A
Primary Hardware Development	WR/RCP	NSWC, CSS		1.872	11/00	1.000	11/01	0.717	11/02			
Systems Engineering	Various	NSWC, CSS/NAVAIR	4.250	3.655	11/00	3.192	11/01	1.882	11/02	CONT.	CONT.	N/A
Tooling												
GFE												
Award Fees	SS/CPIF	Raytheon, RI	0.439							CONT.	CONT.	
Subtotal Product Development			7.649	8.217		4.986		2.599		CONT.	CONT.	
Remarks: Due to a large projected cost overrun on ICWS, all work contracted to Raytheon on the CPIF contract was transferred to Lockheed Martin FP contract and NSWC, CSS Panama City, Florida.												
Development Support Equipment												
Software Development	SS/CPIF	Raytheon, RI	10.533							CONT.	CONT.	
Software Development	SS/FFP	Lockheed / Raytheon, RI		2.880	11/00	2.359	11/01	2.000	11/02	CONT.	CONT.	
Software Development	WR_PD	NSWC/CD,ARL/UT,ONR	8.333	4.553	11/00	2.935	11/01	3.839	11/02	CONT.	CONT.	
Software Development	SS/FFP	SAIC				2.031	11/01	2.228	11/02	CONT.	CONT.	
Technical Data			0.100									
Subtotal Support			18.966	7.433		7.325		8.067		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 16 of 32)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Surface & Shallow Water MCM/0603502N			Integrated Combat Weapons System/Q1233/Q2388						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.200								0.200	N/A
Operational Test & Evaluation			1.592								1.592	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			1.792	0.000		0.000		0.000		0.000	1.792	
Remarks:												
Contractor Engineering Support			0.153								0.000	
Government Engineering Support			0.500								0.000	
Program Management Support	VAR	NAVSEA	1.310	1.402	11/00	2.308	11/01	2.092	11/02	Cont.	CONT.	N/A
Travel			0.100								0.100	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			2.063	1.402		2.308		2.092		Cont.	CONT.	
Remarks:												
Total Cost			30.470	17.052		14.619		12.758				
Remarks:												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 17 of 32)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N			PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		11.666	5.235	4.698	4.811	9.906	20.133	29.242	CONT.	CONT.
RDT&E Articles Qty										
<p>A. Mission Description and Budget Item Justification: This program provides for a combination of joint US Marine Corps and US Navy projects planned to counter the threat to amphibious landing forces from known and projected foreign land and sea mines and light obstacles in the beach zone and surf zone approaches to amphibious assault areas. It develops systems for explosive mine clearance. Included are the Distributed Explosives Technology (DET), Shallow Water Assault Breach System (SABRE), incremental enhancements to assault breaching mission (lane marking, obstacle breaching, and launch control safety), and follow-on Far Term efforts.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p>										

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131

1. (U) FY 2001 ACCOMPLISHMENTS

(U) SABRE

Support

- (U) (\$ 1.026) Government Engineering Support - Program terminated. Funds required for disposition of hazardous and explosive material.

(U) DET

-Product Development

- (U) (\$.024) Primary Hardware Development - Complete DET system development.

Development Support

- (U) (\$.150) Integrated Logistic Support - Training development and support.
- (U) (\$.020) Configuration Management - Complete Technical Data Package (TDP).

Test and Evaluation

- (U) (\$.443) Operational Test and Evaluation - Complete OT testing.

Support

- (U) (\$.730) Government Engineering Support - Complete DET development, and provide TDA engineering.
- (U) (\$.274) Program Management Support
- (U) (\$.025) Travel

(U) ABS Incremental Enhancements

Product Development

- (U) (\$1.200) Primary Hardware Development - Develop incremental enhancements to support ABS mission including lane marking, obstacle breaching and launch control safety.
- (U) (\$.100) Systems Engineering - Support incremental enhancements

Development Support

- (U) (\$.100) Integrated Logistic Support - Support incremental enhancements
- (U) (\$.075) Configuration Management - Support TDP for incremental enhancements.
- (U) (\$.063) Technical Data - Prepare TDP to support incremental enhancements.

Support

- (U) (\$.800) Government Engineering Support - Design Agent (DA) engineering support.

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 19 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N	Assault Breaching Systems/Q2131
<p>1. (U) FY 2001 ACCOMPLISHMENTS continued (U) Far term System Development Product Development - (U) (\$.925) Primary Hardware Development - Risk reduction and preparation for far term - (U) (\$.540) Systems Engineering - Far term preparation - (U) (\$.225) Government Furnished Equipment - Mine threat procurement for far term development. Development Support - (U) (\$.100) Integrated Logistic Support - Risk reduction and far term system preparation - (U) (\$.100) Configuration Management - Support far term system development - (U) (\$.200) Technical Data - Support far term system development Support - (U) (\$3.888) Government Engineering Support - TDA/DA engineering support. - (U) (\$.633) Program Management Support - (U) (\$.025) Travel</p> <p>2. (U) FY 2002 PLANS (U) Far term System Development Product Development - (U) (\$.606) Primary Hardware Development - COBRA development to include surf zone - (U) (\$.593) Systems Engineering - Far term preparation - (U) (\$.200) Government Furnished Equipment - Mine threat procurement for far term development. Test and Evaluation - (U) (\$.576) Developmental Test & Evaluation - Far term contract options to support demonstration tests. Support - (U) (\$2.046) Government Engineering Support - TDA/DA engineering support. - (U) (\$.739) Program Management Support - (U) (\$.400) Contractor Engineering Support - (U) (\$.075) Travel</p>		

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 20 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N	Assault Breaching Systems/Q2131
<p>3. (U) FY 2003 PLANS (U) Far term System Development Product Development - (U) (\$0.725) Systems Engineering - Development of government analysis tools to evaluate the performance of concepts being developed for the far term systems. - (U) (\$0.500) Government Furnished Equipment - Mine threat procurement for far term development. Test and Evaluation - (U) (\$1.682) Developmental Test & Evaluation - Far term contract options to support demonstration tests. Support - (U) (\$.817) Government Engineering Support - TDA/DA engineering support. Conduct AoA on far term concepts. Prepare for transition / MS A of far term concept(s). - (U) (\$0.699) Program Management Support - (U) (\$0.200) Contractor Engineering Support - (U) (\$0.075) Travel</p>		

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 21 of 32)

UNCLASSIFIED

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UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002																					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131																										
<p>B. OTHER PROGRAM FUNDING SUMMARY</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;"></th> <th style="width: 5%; text-align: center;"><u>FY 2001</u></th> <th style="width: 5%; text-align: center;"><u>FY 2002</u></th> <th style="width: 5%; text-align: center;"><u>FY 2003</u></th> <th style="width: 5%; text-align: center;"><u>FY 2004</u></th> <th style="width: 5%; text-align: center;"><u>FY 2005</u></th> <th style="width: 5%; text-align: center;"><u>FY 2006</u></th> <th style="width: 5%; text-align: center;"><u>FY 2007</u></th> <th style="width: 10%; text-align: center;"><u>TO COMPLETE</u></th> <th style="width: 10%; text-align: center;"><u>TOTAL COST</u></th> </tr> </thead> <tbody> <tr> <td>(U) OPN (SWMCM Line 262400 (Reflects cancellation of DET/SABRE)</td> <td style="text-align: right;">16.248</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0</td> <td style="text-align: right;">20.712</td> </tr> </tbody> </table> <p>C. Acquisition Strategy: The planned tasks for FY 01,02,03, and 04 will be accomplished to support the AOA "in an effort" to reduce cost and schedule risk associated with integrating unique mine kill mechanisms into conventional weapons systems.</p> <p>D. Schedule Profile</p> <p>See attached</p>										<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>TO COMPLETE</u>	<u>TOTAL COST</u>	(U) OPN (SWMCM Line 262400 (Reflects cancellation of DET/SABRE)	16.248	0.000	0.000	0.000	0.000	0.000	0.000	0	20.712
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>TO COMPLETE</u>	<u>TOTAL COST</u>																			
(U) OPN (SWMCM Line 262400 (Reflects cancellation of DET/SABRE)	16.248	0.000	0.000	0.000	0.000	0.000	0.000	0	20.712																			

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 22 of 32)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131

DET PROGRAM SCHEDULE

[illegible]

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 23 of 32)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N		PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131			

SABRE PROGRAM SCHEDULE

	FY 2000				FY 2001				FY 2002				FY 2003				FY 2004				FY 2005				FY 2006				FY 2007			
Events	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Test & Evaluation	<div></div>				<div></div>																											
Demil & Disposal	<div></div>																															

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 24 of 32)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N	PROJECT NAME AND NUMBER Assault Breaching Systems/Q2131

ABS FAR-TERM PROGRAM SCHEDULE

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
	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
Surf Zone (SZ) Near term Events								
Surf Zone (SZ) Far term Milestones								
Mine Countermeasure (MCM) System								
Counter Obstacle (CO) System								
Events								
CO System Development Contract								
CO System								

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 25 of 32)

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Surface & Shallow Water MCM/0603502N			Assault Breaching Systems/Q2131						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	IH, CSS, TBD	52.405	2.149	11/00	0.606	11/01	0.000	12/02	CONT.	CONT.	N/A
Ancillary Hardware Development	WR	IH, CSS, TBD	8.100	0.000		0.000				0.000	8.100	N/A
Systems Engineering	WR	IH, CSS	15.000	0.640	11/00	0.593	11/01	0.725	11/02	CONT.	CONT.	N/A
Licenses	WR	N/A	0.800	0.000		0.000				0.000	0.800	N/A
Tooling	WR	IH, CSS, TBD	0.860	0.000		0.000				0.000	0.860	N/A
GFE	WR	IH, CSS	3.225	0.225	06/01	0.200	06/02	0.500	06/03	CONT.	CONT.	N/A
Award Fees	N/A	N/A	0.500	0.000		0.000				0.000	0.500	
Subtotal Product Development			80.890	3.014		1.399		1.225		CONT.	CONT.	
Remarks:												
Development Support Equipment	WR	IH, CSS, TBD	11.721	0.000						CONT.	CONT.	N/A
Software Development	WR	CSS	8.037	0.000						CONT.	CONT.	N/A
Training Development	WR	IH, CSS	2.000	0.000						CONT.	CONT.	N/A
Integrated Logistics Support	WR	IH, CSS	2.362	0.350	11/00					CONT.	CONT.	N/A
Configuration Management	WR	IH, CSS	3.549	0.195	11/00					CONT.	CONT.	N/A
Technical Data	WR	IH, CSS	2.325	0.263	11/00					CONT.	CONT.	N/A
GFE	WR	IH, CSS	0.400	0.000						CONT.	CONT.	N/A
Subtotal Support			30.394	0.808		0.000		0.000		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 26 of 32)

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Exhibit R-3 Cost Analysis (page 2)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Surface & Shallow Water MCM/0603502N			Assault Breaching Systems/Q2131						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR, PD	IH, CSS, ONR, TBD	22.940	0.000		0.576	01/02	1.682	12/02	CONT.	CONT.	N/A
Operational Test & Evaluation	WR	IH, CSS, TBD	8.212	0.443	11/00	0.000				0.000	0.443	N/A
Tooling	WR	IH, CSS, TBD	0.700	0.000		0.000				0.000	0.700	N/A
GFE	WR	IH, CSS, TBD	0.400	0.000		0.000				0.000	0.400	N/A
Subtotal T&E			32.252	0.443		0.576		1.682		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	Contract	Vredenburg	2.279	0.000		0.400	11/01	0.200	11/02	CONT.	CONT.	N/A
Government Engineering Support	WR	IH, CSS	9.960	6.444	11/00	2.046	11/01	0.817	11/02	CONT.	CONT.	N/A
Program Management Support	WR	IH, CSS, NAVSEA	9.747	0.907	11/00	0.739	11/01	0.699	11/02	CONT.	CONT.	N/A
Travel	PD	NAVSEA	0.750	0.050	11/00	0.075	11/01	0.075	11/02	CONT.	CONT.	N/A
Labor (Research Personnel)	N/A	N/A									0.000	
Overhead	N/A	N/A									0.000	
Subtotal Management			22.736	7.401		3.260		1.791		CONT.	CONT.	
Remarks:												
Total Cost			166.272	11.666		5.235		4.698				
Remarks:												

R-1 SHOPPING LIST - Item No. 49

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 27 of 32)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Surface & Shallow Water MCM, 0603502N			PROJECT NAME AND NUMBER Unmanned Undersea Vehicle Q2094/Q2852					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		31.529	61.619	76.108	16.421	22.979	54.845	102.961	CONT.	CONT.
RDT&E Articles Qty						1 - LMRS				
<p>A. Mission Description and Budget Item Justification:</p> <p>This project was completely restructured in FY 1994 in response to Congressional direction provided in the FY 1994 DOD Appropriations Act. Specifically, the office of the Secretary of Defense and the Navy were directed to (1) establish priorities among various proposed UUV programs, (2) focus on near-term mine countermeasures issues, and (3) establish affordable, cost-effective programs. The Navy developed an overall UUV Program Plan, which was approved by ASN(RD&A) June 1994, endorsed by USD(A&T) and forwarded to Congress to support FY 1995 budget deliberations.</p> <p>The UUV Program Plan establishes a clandestine, near-term mine reconnaissance capability as the Navy's top UUV priority; a long term-mine reconnaissance system as priority two; the conduct of surveillance, intelligence and tactical oceanography missions as priority three; and exploring advanced UUV designs for the future as priority four. FY 1995 Congressional language complimented the Navy Plan and fully supported priorities one and two starting in FY 1995.</p> <p>The UUV project funds development of the first three priorities of the UUV Program Plan. The Near-Term Mine Reconnaissance System (NMRS) is a minehunting UUV system launched and recovered from an SSN-688 class submarine capable of mine detection, classification, and localization. One NMRS Operational Prototype (OP) system was made available to the Commander Submarine Development Squadron-Five in FY 1999. No further production of the NMRS is planned. The AN/BLQ-11 Long-Term Mine Reconnaissance System (LMRS) is being developed to provide a robust, long-term Fleet capability to conduct clandestine minefield reconnaissance. A quantity of 6-12 LMRSs will be procured beginning in FY05. Eight LMRSs have been funded through POM 02. The Navy's third priority is the conduct of surveillance, intelligence and tactical oceanography. To meet this requirement the Navy will develop a Mission Reconfigurable UUV (MRUUV) system that is capable of performing different missions. It is envisioned that this system will adapt elements of the LRMS design to develop a more modular UUV capable of accomodating multiple payload sensors appropriate to meet various mission requirements. ONR will develop technologies for payload sensors and increased autonomy under the Autonomous Operations Future Naval Capability (FNC) programs to support risk mitigation for the MRUUV program. The Autonomous Operations FNC will demonstrate a Maritime Reconnaissance system in FY04 and an Undersea Search and Survey/Communication Navigation Aid system in FY05. Technologies from these systems will transition to MRUUV during demonstration year.</p> <p>Congress appropriated \$1.5M in FY01 and \$6.1M in FY02 for an Unmanned Underwater Vehicle (UUV) Center of Excellence at NUWC DIVKPT. Funds are being used to develop a program plan to define current and future UUV testing requirements.</p> <p>The Long-Term Mine Reconnaissance System (LMRS) is currently in development. The fabrication of a prototype system will begin in FY02. This prototype system will support test and evaluation, and will transition to fleet operations in FY05.</p>										

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 28 of 32)

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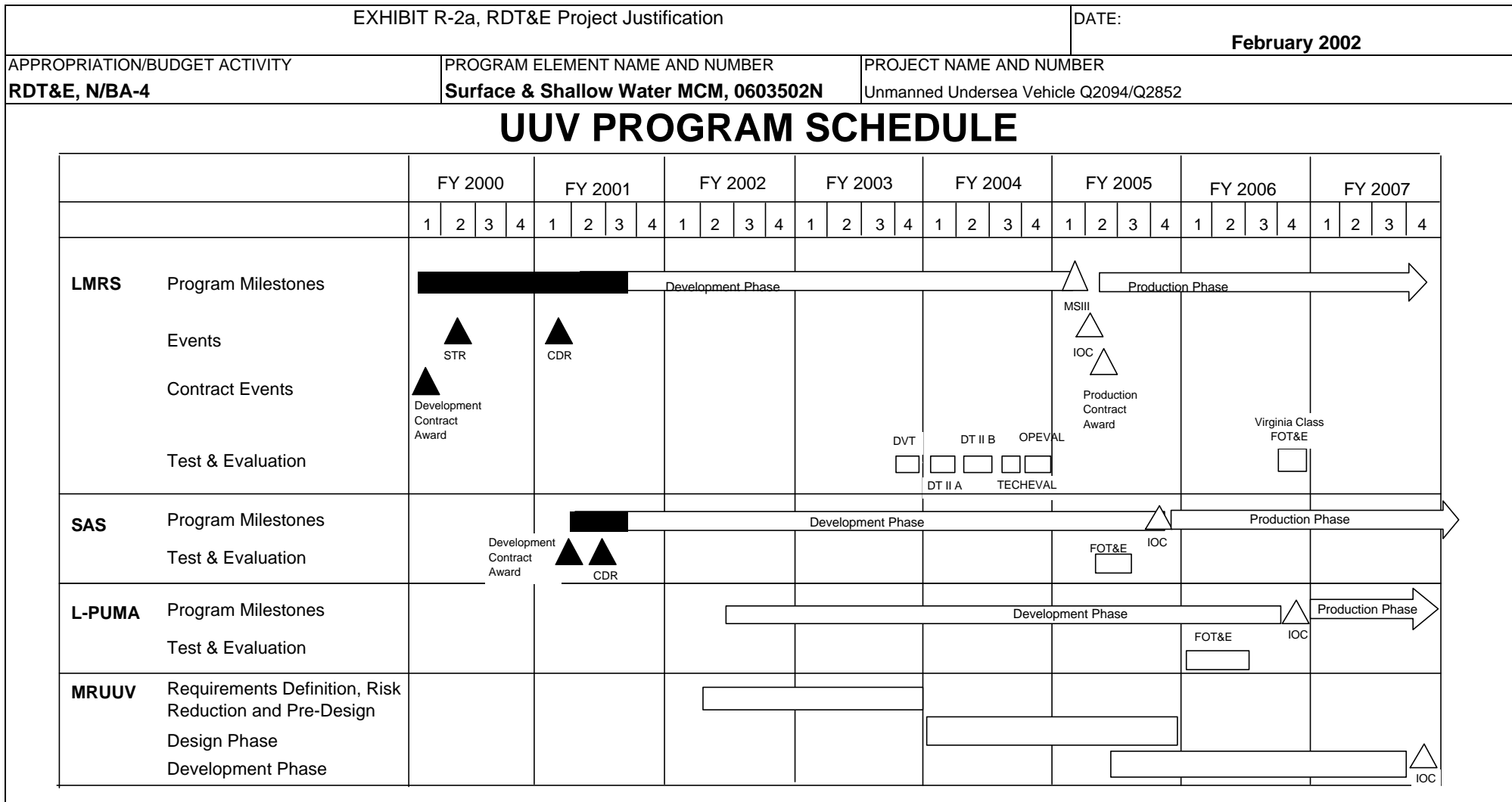
EXHIBIT R-2a, RDT&E Project Justification							February 2002		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N/BA-4	Surface & Shallow Water MCM, 0603502N				Unmanned Undersea Vehicle Q2094/Q2852				
(U) PROGRAM ACCOMPLISHMENTS AND PLANS:									
1. (U) FY 2001 ACCOMPLISHMENTS:									
- (U) (25.643) (LMRS): Continued development phase of prototype system. Completed Final System CDR.									
- (U) (1.486) (UUV COE:) Developed a program to define current and future UUV test requirements.									
- (U) (4.400) (SAS:) Developed technology for slow speed Synthetic Aperture Sonar for UUVs.									
2. (U) FY 2002 PLAN:									
(U) (51.473) (LMRS): Continue development phase and begin fabrication of prototype system.									
(U) (2.100) (MRUUV): Analysis Of Alternatives for MRUUV									
(U) (1.000) UUV P3I Engineering Studies/Prototype Design									
(U) (1.000) UUV Master Plan									
(U) (6.046) (UUV COE:) Continue development of plans for UUV test center.									
3. (U) FY 2003 PLAN:									
(U) (36.608) (LMRS): Continue development phase and complete fabrication of prototype system. Start prototype testing.									
(U) (25.300) (MRUUV): Acquisition Planning and specification development.									
(U) (14.200) (UUV P3I): Continue Engineering Studies/Prototype Design									
B. Other Program Funding Summary: (\$ in Millions)									
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
OPN PE 0204281N; Line Item 217100	0.000	0.000	0.000	52.410	48.131	49.024	60.683	CONT.	CONT.
O&MN PE 0204281N; 12B6 (LMRS)	0.000	0.000	0.000	5.340	5.990	6.177	6.317	CONT.	CONT.
C. Acquisition Strategy: The LMRS acquisition strategy is structured to maximize competition during system development. In FY97 three one year contracts were awarded for development of preliminary design. In early FY98, two of the preliminary design contractors were selected to continue development through a critical design review. Selection of these two contractors was based primarily on the contractor's performance during the preliminary design contract. In early FY00, Boeing was selected to complete the LMRS design, fabricate a prototype system and support in-water testing. Procurement of the LMRS will be sole source to Boeing. A competitive procurement is not cost effective due to the limited (6-12) number of systems planned for procurement. The Program Sponsor (N773) has committed to reallocating a portion of the OPN (\$45.0M) and O&MN (\$5.4M) to RDT&E in FY04. The additional RDT&E funds will be used for continuation of LMRS baseline development, fabrication of the SAS/LPUMA Engineering Development Model (EDM), and acceleration of MRUUV. \$7.4M of FY04 OPN funds will be used to fund procurement of long lead material for FY05 LMRS production. In addition, a portion of the FY05 OPN and O&MN dollars will be reallocated to RDT&E to complete the LMRS baseline and maintain the accelerated MRUUV program.									
PBD 130C added \$40M to FY03 to accelerate the development of more advanced UUVs. Funding will be used to accelerate the development of Synthetic Aperture Sonar (SAS), LMRS Precision Underwater Mapping (L-PUMA), and Mission Reconfigurable UUV (MRUUV) to address multiple missions.									
The MRUUV project will conduct an AOA in FY02 and commence acquisition planning and specification development in FY03. Procurement and operations not planned within the FYDP.									

R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 29 of 32)

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R-1 SHOPPING LIST - Item No. 49

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 30 of 32)

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Exhibit R-3 Cost Analysis									DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NAME AND NUMBER						PROJECT NAME AND NUMBER				
RDT&E, NAVY/BA-4			Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N						Unmanned undersea Vehicle Q2094/Q2852				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Primary Hardware Development (LMRS) Design Contracts	FFP/ CPAF	NGC, Boeing and Lockheed Martin	29.984	0.053								30.878	
Award Fees (LMRS Design)			0.841										
Primary Hardware Development (LMRS) Development Contract	CPAF/IF	Boeing	23.967	19.131	N/A	37.561	N/A	26.929	N/A	Cont	Cont	Cont	
Award fees (LMRS Development)			0.517	1.191		1.799		3.076		Cont	Cont	Cont	
EAC Incentive Fee (LMRS Development)				0.060		0.600		0.420		Cont	Cont	Cont	
AUPC Incentive Fee (LMRS Development)													
Engineering Services			0.164	0.000		0.100		0.470		Cont	Cont	Cont	
MRUUV Development						2.100		25.300					
P3I				4.400		1.000		14.200					
UUV Master Plan						1.000							
UUV Center of Excellence				1.486		6.046							
GFE													
Subtotal Product Development			55.473	26.321		50.206		70.395		Cont	Cont	Cont	
Development Support Equipment			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Software Development			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Training Development			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Integrated Logistics Support			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Configuration Management			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Technical Data			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
GFE			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Subtotal Support			0.000	0.000		0.000		0.000		Cont	Cont	Cont	
Remarks:													

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, NAVY/BA-4				PROGRAM ELEMENT NAME AND NUMBER Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N				PROJECT NAME AND NUMBER Unmanned undersea Vehicle Q2094/Q2852				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY 2000 and Prior	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC		0.798		1.398		0.585		Cont	Cont	Cont
Operational Test & Evaluation	WR	NUWC						0.065		Cont	Cont	Cont
GFE	WR	NUWC	0.032	0.007						Cont	Cont	Cont
Govt Facilities Cost (LMRS Develop)	WR	NUWC, NSWC	2.178	0.861		0.241		0.775		Cont	Cont	Cont
Subtotal T&E			2.210	1.666		1.639		1.425		Cont	Cont	Cont
Remarks:												
Contractor Engineering Support	FFP	JHU/APL, ARL/UT	3.469	0.055		0.550		0.050		Cont	Cont	Cont
Government Engineering Support	WR	NUWC, NSWC	10.279	2.457		4.526		2.105		Cont	Cont	Cont
Program Management Support	Various	RPI, Vred, Stanley, KPMG	2.771	0.610		0.539		0.397		Cont	Cont	Cont
		ONR				2.706		1.221		Cont	Cont	Cont
		Other	0.536	0.317		1.353		0.415		Cont	Cont	Cont
Travel			0.216	0.103		0.100		0.100		Cont	Cont	Cont
Subtotal Management			17.271	3.542		9.774		4.288		Cont	Cont	Cont
Remarks:												
Total Cost			74.954	31.529		61.619		76.108		Cont	Cont	Cont
Remarks:												

R-1 SHOPPING LIST - Item No. 49

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

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4					Surface Ship Torpedo Defense / 0603506N - Subhead H4NZ					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost	
Total PE Cost	15.514	18.552	3.244	3.256	4.687	1.219	1.224	0.000	47.696	
Joint US/UK Surface Ship Torpedo Defense V2045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Surface Ship Torpedo Defense V0225*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Surface Ship Torpedo Defense F0225*	15.514	18.552	3.244	3.256	4.687	1.219	1.224	0.000	47.696	

*Due to realignment to PEO Submarines FY 2001, funds will be allocated under Project Unit F0225 vice V0225.

A. Mission Description and Budget Line Justification: Project V2045 continues a joint collaborative program with the United Kingdom to develop future technologies identified during the recent Demonstration/Validation (D&V) phase of the program, such as the mobile expendable acoustic decoy, concept one countermeasures, improved torpedo detection classification and localization, and improved performance of the AN/SLQ-25A in shallow water/littoral regions. Project V0225/F0225 develops Tripwire Torpedo Defense System (TTDS) which will provide additional sensors/processor integration with the AN/SLQ-25A and an Anti-Torpedo Torpedo (ATT) All-Up-Round (AUR) countermeasure.

B. Program Change Summary:

	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	15.853	4.818	
(U) Appropriated Value:	15.853	4.818	
(U) Adjustments to FY 2001 / 2002	-0.339	13.734	
Appropriated Value / FY 2002			
President's Budget:			
(U) FY 2003 Pres Budget Submit:	15.514	18.552	3.244

Funding: FY 2001: FY01 SBIR (-\$0.339).
FY 2002: Congressional Plus-Up - [Tripwire Torpedo Defense (+12.400), Micro-electromechanical System (+1.500)], and Sec 8123: Management Reform Initiative (-0.166).

Schedule: Not Applicable

Technical: Not Applicable

R-1 SHOPPING LIST - Item No. 50 - 1 of 50 -5

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 5)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Surface Ship Torpedo Defense, 0603506N				Surface Ship Torpedo Defense V0225/F0225					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost	
Project Cost		15.514	18.552	3.244	3.256	4.687	1.219	1.224	0.000	47.696	
RDT&E Articles Qty											
A. Mission Description and Budget Item Justification: Project F0225 develops AN/WSQ-11 Torpedo Defense System which will provide additional sensors/processor integration with the AN/SLQ-25A and an Anti-Torpedo Torpedo All-Up-Round (ATT AUR) countermeasure.											
(U) PROGRAM ACCOMPLISHMENTS AND PLANS:											
1. (U) FY 2001 PLAN:											
- (U) (\$5.814) Continue Development of the ATT AUR. Conduct Advanced Technology Demonstration (ATD) on ATT AUR.											
- (U) (\$7.770) Initiate Development of Tripwire Sensors & TDCL processor for large Deck Ships and DDG Flight IIA Ships. Conduct At-Sea Trial.											
- (U) (\$1.930) Develop Distributed Engineering Center for integrating shipbuilder and design agent's developmental efforts.											
2. (U) FY 2002 PLAN:											
- (U) (\$0.983) Continue Development of ATT AUR for Surface Ships. Award ATT SBIR Contract.											
- (U) (\$16.069) Continue Development of Tripwire Sensors and TDCL processor and for large Deck Ships and DDG Flight IIA Ships. Develop ADM model. Conduct ADM testing.											
- (U) (\$1.500) Continue Development of the Micro-Electromechanical System.											
3. (U) FY 2003 PLAN:											
- (U) (\$0.654) Continue Development of ATT AUR for Surface Ships. Develop ADM Model. Conduct ADM Testing.											
- (U) (\$2.590) Continue Development of Tripwire Sensors and TDCL processor for large Deck Ships and DDG Flight IIA Ships. Continue ADM testing.											
OPN BLI: 221300											
Surface Ship Torpedo Defense - SSTD											
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO COMPLETE	TOTAL		
	0	0	0	0	0	4.967	9.944	CONT.	COST		
									CONT.		
WPN BLI: 311300											
Surface Ship Torpedo Defense - SSTD											
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO COMPLETE	TOTAL		
	0	0	0	0	0	4.074	5.960	CONT.	COST		
									CONT.		

R-1 SHOPPING LIST - Item No. 50 - 2 of 50 - 5

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 2 of 5)



















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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Surface Ship Torpedo Defense, 0603506N	PROJECT NAME AND NUMBER Surface Ship Torpedo Defense/V0225/F0225

C. Acquisition Strategy: Not Applicable

D. Schedule Profile:

	FY01	FY02	FY03	FY04	FY05	FY06	FY07
AN/WSQ-11		Non-Acquisition Phase	 PDR	 CDR-1	 Tripwire LRIP	  CDR-2 ATT LRIP	 DT
Anti-Torpedo Torpedo All Up Round (ATT AUR)	 ATD	 ATT SBIR Contract	  PDR ADM	 EDM-1	 EDM-2		
			ADM Testing		EDM Testing		
Tripwire Sensors	 At-Sea Trials	  At-Sea Trials ADM	 PDR	 EDM			
		ADM Testing		EDM Testing			

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Surface Ship Torpedo Defense/0603506N			Surface Ship Torpedo Defense/V0225/F0225						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	FEL, Farmingdale, NJ	0.463			0.000	01/02	0.450	01/03	CONT.	CONT.	
Ancillary Hardware Development	CPFF	AAC	0.260	6.000	05/01	7.600	01/02	0.819	01/03	CONT.	CONT.	
ATT SBIR	CPFF	TBD	0.000	0.000		0.400	01/02					
Systems Engineering	WR	NUWC, Newport, RI	0.025	2.057	03/01	1.957	01/02	0.400	01/03	CONT.	CONT.	
Systems Engineering	CPFF	PSU, State College, PA	0.210	4.925	04/01	3.833	01/02	0.400	01/03	CONT.	CONT.	
Systems Engineering	CPFF	UT, TX	0.000	0.050	10/01							
Systems Engineering	CPFF	UW, WA	0.000	0.050	10/01							
Systems Engineering	CPFF	JHU, Baltimore , MD	0.090	0.100	05/01	0.000						
Systems Engineering	WR	NSWC, Indian Head, MD	1.000	1.000	03/01	3.287						
Systems Engineering	WR	NUWC/Keyport, WA	0.030			0.100		0.100		CONT.	CONT.	
Systems Engineering	WR	FTSCLANT/Norfolk, VA	0.000	0.065	04/01	0.075		0.075		CONT.	CONT.	
GFE												
Award Fees												
Subtotal Product Development			2.078	14.247		17.252		2.244		CONT.	CONT.	
Remarks:												
Development Support Equipment										CONT.	CONT.	
Software Development										CONT.	CONT.	
Training Development										CONT.	CONT.	
Integrated Logistics Support										CONT.	CONT.	
Configuration Management										CONT.	CONT.	
Technical Data										CONT.	CONT.	
GFE										CONT.	CONT.	
Miscellaneous			0.020	0.757		0.600		0.300		CONT.	CONT.	
Subtotal Support			0.020	0.757		0.600		0.300		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 50 - 4 of 50 - 5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 4 of 5)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4				Surface Ship Torpedo Defense/0603506N			Surface Ship Torpedo Defense/V0225/F0225					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Operational Test & Evaluation												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		CONT.	CONT.	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support			0.000	0.510		0.600		0.600		CONT.	CONT.	
Travel			0.000			0.100		0.100		CONT.	CONT.	
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.510		0.700		0.700		CONT.	CONT.	
Remarks:												
Total Cost			2.098	15.514		18.552		3.244		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 50 - 5 of 50 - 5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 5)

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE:		
APPROPRIATION/BUDGET ACTIVITY							February 2002		
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4							R-1 ITEM NOMENCLATURE		
							Carrier Systems Development - 0603512N		
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	143.951	162.635	88.913	85.486	87.484	60.664	44.291	Cont.	Cont.
S1722 CV Weapons Elevator Improvements	1.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.604
42208 Future CV R & D	120.187	123.359	81.095	84.265	87.404	60.664	44.291	Cont.	Cont.
42693 Carrier Systems Definition	13.818	33.134	0.000	0.000	0.000	0.000	0.000	0.000	136.128
W1723 CV Launch & Recovery Systems	3.829	5.299	7.818	1.221	0.080	0.000	0.000	0.000	Continuing
W2269 EAF Matting	5.077	0.843	0.000	0.000	0.000	0.000	0.000	0.000	15.81
Quantity of RDT&E Articles									
<p>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:</p> <ul style="list-style-type: none"> - (U) (S1722) -- Development of standardized, supportable and maintainable aircraft carrier weapons elevators components. - (U) (42208) -- Development of ship hull, mechanical, propulsion, electrical, aviation and combat support systems, subsystems and components to significantly improve aircraft carrier affordability, manpower requirements, survivability, 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) (42693) - Supports post Milestone I ship system technical definition and refinement of cost estimates through engineering efforts. These efforts will support ORD level requirements definition and assessments for industrial capability, risk, Integrated Logistics Support (ILS), schedule development and tracking to ensure a coordinated acquisition effort. Continue Total Ship Integration efforts to develop ship requirements and definition at the total systems level. - (U) (W1723) -- Development of all systems required to provide approach and landing guidance and control, recovery, service, support and launch aircraft operating onto or from ships. Payoffs include increased safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced manning, increased aircraft service life and fleet modernization. - (U) (W2269) -- Development of Lightweight Mat and Expeditionary Arresting Gear for use at Marine Corps Expeditionary Airfields (EAF). 									

R-1 SHOPPING LIST - Item No. 51-1 of 51-29

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 1 of 29)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4		R-1 ITEM NOMENCLATURE Carrier Systems Development - 0603512N	
<u>Program Change Summary</u>			
	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	149.549 *	165.148	
(U) Appropriated Value:	150.952	165.150	
(U) Adjustments to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:	-7.001	-2.515	
(U) FY 2003 OSD/OMB Budget Submit:	143.951	162.635	88.913
Funding:			
* FY01 President's Budget includes \$1.938M Congressional plus up for ASW Tactical Decision Aids (\$2.0M plus up decreased by \$0.062M for rescissions).			
FY01 change (-7.001\$M) The FY01 net decrease is the result of adjustments as follows:			
Decrease of \$3.588M due to Small Business Innovation Research assessment in accordance with 15 USC 638. Project Unit 42208 (-\$3.011), PROJECT UNIT 42693 (- \$0.376), and PROJECT UNIT			
W1723 (-\$.201);			
Decrease of \$2.587M within PU W1723, CV Launch & Recovery Systems- reflects a Below Threshold Reprogramming (BTR) of \$2.587M to fund the M-31 program for \$1.0M, and the VISUAL			
program			
for \$1.587M;			
Increase of \$0.971M within PU W2269, EAF Matting resulting from an internal BTR to reprioritize programs and support unfunded requirements; and			
Decrease of \$1.797M for reprioritization of requirements within the Navy.			
FY02 change (- \$2.515M) Decrease of \$1.049M within Program Unit S1722, CV Weapons Elevator Improvements due to termination of development effort; a miscellaneous increase of \$0.002M			
within PROJECT UNIT W1723; a decrease of \$1.450M for Section 8123: Management Reform Initiative, and miscellaneous decreases of \$0.014M.			
FY03 change			
Schedule: (1) W1723 - Deferral of the ARC System program contract award from 2Q FY01 to 1Q FY02 was due to assignment of this effort as an ACAT IVM program and delays in developing, coordinating, and finalizing program documentation and source selection. These delays have caused the following delays in the ARC program: RFP has moved from 4Q/00 to 4Q/01, PDR has moved from 3Q/01 to 2Q/02, CDR has moved from 2Q/02 to 1Q03, DT has moved from 4Q/02 to 2Q/03. OT requirement has been deleted based on ACAT IVM assignment. Discussions with industry resulted in changes to the AAG solicitation which delayed the RFP from 3Q/01 to 1Q/02 and is now reflected in the 0604512N budget. CREI CDR has been moved from 2Q/03 to 3Q/03 and CREI DT has moved from 2-3Q/03 to 1-3Q/04 to ensure sufficient time to design and test prototype.			
(2) W2269 - Prototype delivery delayed from 4Q/00 to 2Q/01. This delay in delivery has caused DT to move from 1Q-4Q/01 to 3Q/01-2Q/02.			
(3) S1722 - Advanced development of weapons elevator components is terminated within this Project Unit.			
Technical: Not applicable.			

R-1 SHOPPING LIST - Item No.

51-2 of 51-29

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 29)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA 4		PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N			PROJECT NAME AND NUMBER CV Weapons Elevator Improvements S1722				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	1.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
<p>A. Mission Description and Budget Item Justification</p> <p>This project provides for advanced development, fabrication, test, evaluation and documentation of standardized aircraft carrier weapons elevators components such as control systems, hoist machinery, doors and hatches. Emphasis is placed on the reduction of total ownership cost, improvement of safety, reliability, maintainability and watertight integrity and weight reduction.</p> <p>- (U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>FY 2001 ACCOMPLISHMENTS:</p> <p>(U)(\$.230) – Completed design for model ropeless elevator safety system.</p> <p>(U)(\$.200) – Developed simulation model for multiple cars in non-traditional trunk.</p> <p>(U)(\$.160) – Investigated feasibility of available smart sensor networks for condition sensing.</p> <p>(U)(\$.100) – Tested magnetostrictive actuator for use on elevator closure systems.</p> <p>(U)(\$.150) - Developed intelligent networked controls for existing elevator systems.</p> <p>(U)(\$.100) - Completed alternate overspeed governor tests.</p> <p>(U)(\$.100) - Investigated use of embedded force sensing pins.</p>									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER CV Weapons Elevator Improvements S1722
<p>B. Other Program Funding Summary: Not applicable</p> <p>C. Acquisition Strategy: Not applicable</p> <p>D. Schedule Profile <u>FY 2001</u></p> <p>Program Milestones 3Q Complete design for ropeless elevator</p> <p>Engineering Milestones 4Q Develop simulation model for multiple cars 2Q Investigate feasibility of available SMART sensor networks for condition sensing. 4Q Develop intelligent networked controls for existing elevator systems 4Q Investigate embedded force sensing pins</p> <p>T&E Milestones 4Q Test magnetostrictive actuator for use on elevator closures 2Q Complete alternate governor testing</p> <p>Contract Milestones</p>		

R-1 SHOPPING LIST - Item No. 51-4 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 29)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4			PROGRAM ELEMENT Carrier Systems Development - 0603512N			PROJECT NAME AND NUMBER CV Weapons Elevator Improvements S1722						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC Philadelphia	1.218	0.850	12/00						2.068	
Ancillary Hardware Development		Misc	0.821								0.821	
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			2.039	0.850							2.889	
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-5 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 29)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			CV Weapons Elevator Improvements S1722						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Philadelphia	0.525	0.190	12/00						0.715	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.525	0.190							0.715	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			2.564	1.040		0.000		0.000		0.000	3.604	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-6 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 29)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N				PROJECT NAME AND NUMBER Future Carrier R&D - 42208				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	ost to Comple	Total Cost
Project Cost	120.187	123.359	81.095	84.265	87.404	60.664	44.291	Cont.	Cont.
RDT&E Articles Qty									
<p>A. (U) <u>Mission Description and Budget Item Justification</u></p> <p>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 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.</p> <p>- (U) PROGRAM ACCOMPLISHMENTS AND PLANS: FY 2001 ACCOMPLISHMENTS:</p> <p>- (U) (\$50.411) Non-Nuclear Propulsion Plant Development</p> <ul style="list-style-type: none">- (U) (\$18.003) Began detailed design of the main turbine generator (MTG) prototype, development of MTG prototype testing requirements and plans. Continued preliminary design of the main propulsion unit.- (U) (\$6.226) Determined changes to and complete layout of major electric plant equipment such as load centers outside of propulsion plant spaces. Continued development of inputs to the integrated product model database. Refined interface requirements for the non-propulsion systems with the propulsion and power distribution systems.- (U) (\$7.785) Continued prototyping and implementation of automated workflow for construction deliverables. Continued to integrate analysis and other required function into the product model design and continue adding design data to the database.- (U) (\$18.397) Completed preliminary designs and continue development of mechanical and electrical systems that interface with the propulsion plant. Finalized overall layout of non-propulsion plant mechanical and electrical systems and assess preliminary volume and weight data. <p>- (U) (\$43.738) – Aircraft Launch, Recovery & Support – Continued Electromagnetic Aircraft Launch System Program Definition and Risk Reduction (PDRR) phase. Initiated prototype system long-lead time material procurements. Conducted component and subsystem development testing. Conducted incremental Preliminary and Contract Design Reviews. Began PDRR system manufacture and integration. Continued CVNX-1/CVNX-2 arrangement studies, system integration and support requirements development. Developed hull, mechanical and electrical system requirements. Provide management, system engineering, and ship integration support for all aviation related systems.</p> <p>- (U) (\$4.488) – Battle Damage Prevention & Recovery - Continued battle prevention and ship survivability ship design assessments with limited small scale testing and analyses for Under Water Protection System (UWPS), Weapons Damage and Residual Strength and Torpedo/ Mine Side Protection System (T/MSPS) protection systems. Commenced design of Dynamic Armor Protection System (DAPS) components and small scale testing of DAPS concepts. Commenced Live Fire Test & Evaluation efforts to support development of documentation required for MS II approval, including commencing of surrogate testing.</p>									

R-1 SHOPPING LIST - Item No. 51-7 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 29)**UNCLASSIFIED**

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N / BA 4	Carrier Systems Development - 0603512N	Future Carrier R&D - 42208
<p>- (U) (\$12.052) – Systems Development – Commenced total ship design integration. Commenced design, engineering and interoperability analyses to support overall CVNX Design Development. Perform total ownership cost (TOC) reductions/analyses, survivability analyses, systems readiness reviews gap analyses, Advanced Launch & Recovery analyses, trade studies and Lethality Studies. Continue development of manpower and material support alternatives which will achieve manpower reductions and total ownership cost savings. Performed acquisition planning, system readiness reviews (SRR), and documentation to support MS II.</p> <p>- (U) (\$7.560) - Smart Carrier - The Smart Carrier Program is a Naval Aviation (N88) initiative involving the introduction of information technology, automation and controls, and process improvements with the goal of reducing total workload, lowering TOC, and enhancing quality of life. The following technologies were installed for a demonstration and assessment: Advanced Damage Control, Remote Shaft Alley Monitoring, Integrated Condition Assessment System, Rechargeable Battle Lanterns, Battery-powered Tools and Bulkhead Surface Coating.</p> <p>- (U) (\$1.938) - ASW Tactical Decision Aids - Integrated tactical decision aid technology from the Advanced Undersea Warfare Concept into future aircraft carrier combat systems, an initial step in fulfilling a larger vision of Network - Centric Undersea Warfare Theater Combat System. Developed a prototype system in the aircraft carrier tactical Support Center Integrated Warfare Commander Cell.</p> <p>FY 2002 PLAN:</p> <p>-(U) (\$55.799) Non-Nuclear Propulsion Plant Development</p> <p>- (U) (\$26.500) Begin fabrication of prototype MTG and complete detailed design. Complete preliminary design of the main propulsion unit. Continue development of testing requirements and the identification and evaluation of testing capabilities.</p> <p>- (U) (\$8.900) Continue development of inputs to the integrated product model.</p> <p>- (U) (\$6.149) Continue prototyping and implementation of automated workflow for construction deliverables. Continue to integrate analysis and other required functions into product model design.</p> <p>- (U) (\$14.250) Continue development of mechanical and electrical systems that interface with the propulsion plant.</p> <p>- (U) (\$4.900) - Commence development of the Large Capacity Reverse Osmosis Desalination Plant based on system design requirements developed by non-nuclear propulsion plant efforts.</p> <p>- (U) (\$47.683) – Aircraft Launch, Recovery & Support – Continue Electromagnetic Aircraft Launch System Program definition and Risk Reduction phase. Complete prototype test facility design and construction. Complete manufacture, integration and acceptance testing of prototype launch systems. Begin installation of prototype systems in test facilities. Initiate CVNX-1 integration development. Provide management, system engineering, and ship integration support for all aviation related systems.</p> <p>- (U) (\$5.000) – Battle Damage Prevention & Recovery - Continue battle damage prevention and recovery assessments and design improvements development. Continue acoustic and non-acoustic signatures design support efforts. Expand modeling and simulation and scaled testing efforts for advanced protection systems development to address Underwater Protection, Weapons Damage and Residual Strength and Dynamic Armor Protection system that are applicable to Nimitz and modified Nimitz hull forms. Continue and expand advanced damage control systems and improved magazines/shipboard fire protection systems technologies development.</p>		

R-1 SHOPPING LIST - Item No. 51-8 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 8 of 29)

UNCLASSIFIED

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UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N / BA 4	Carrier Systems Development - 0603512N	Future Carrier R&D - 42208
<p>- (U) (\$5.000) - CVNX Class Technologies - Commence development of long term technology features for integration into the CVNX Class ship design to fulfill operational requirements and to meet ship construction schedule . Items for which initial technology investment will be made include survivability features such as dynamic armor protection and development of items to address deficiencies in service life allowance for weight and stability requirements (KG), as well as meeting sortie generation rate requirements.</p> <p>- (U) (\$2.977) - Systems Development - Continue total ship design integration. Continue design, engineering and interoperability analyses to support overall CVNX Design Development. Perform TOC reductions/analyses, survivability analyses, systems readiness reviews gap analyses, Advanced Launch & Recovery analyses, trade studies and Lethality Studies. Continue development of manpower and material support alternatives which will achieve manpower reductions and total ownership cost savings. Provide acquisition planning support.</p> <p>- (U) (\$2.000) - Smart Carrier - Continue the Smart Carrier initiative involving the introduction of technology insertions and process improvements with the goal of reducing total workload, lowering total ownership cost (TOC). Continue research, evaluation and integration of new technologies and process engineering efforts in support of potential workload reductions. New technologies to be evaluated and/or demonstrated are listed, but not limited to the following: Integrated Workload Reduction System, Lattice Block Material, Laser Induced Surface Improvement.</p> <p>FY 2003 PLAN:</p> <p>-(U) (\$20.900) Non-Nuclear Propulsion Plant Development. Continue fabrication of prototype MTG and continue detailed design. Complete preliminary design of the main propulsion unit. Continue development of testing requirements and the identification and evaluation of testing capabilities.</p> <p>- (U) (\$6.613) - Continue development of the Large Capacity Reverse Osmosis Desalination Plant based on system design requirements developed by non-nuclear propulsion plant efforts.</p> <p>- (U) (\$46.127) – Aircraft Launch, Recovery & Support – Continue Electromagnetic Aircraft Launch System Program Definition and Risk Reduction phase at a reduced level. EMALS integration and testing @ NAWC Lakehurst deferred one year. Ship integration effort deferred one year. Down select and CVNX 1 final configuration decision delayed one year. Estimated cost to complete EMALS increased 22% due to FY03 funding deferral.</p> <p>- (U) (\$5.455) - CVNX Class Technologies - Commence development of long term technology features for integration into the CVNX Class ship design to fulfill operational requirements and to meet ship construction schedule . Items for which initial technology investment will be made include survivability features such as dynamic armor protection and development of items to address deficiencies in service life allowance for weight and stability requirements (KG) as well as sortie generation rate improvement required for CVNX2.</p>		

R-1 SHOPPING LIST - Item No. 51-9 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 9 of 29)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER Future Carrier R&D - 42208
<p>- (U) (\$2.000) - Smart Carrier - Continue the Smart Carrier initiative to identify, evaluate, demonstrate, install, test, and measure the effectiveness of revised processes and selected technologies to meet stated goals for Aircraft Carriers. The USS GEORGE WASHINGTON (CVN 73) and USS ABRAHAM LINCOLN (CVN 72) will be fully outfitted Smart Carriers during FY03.</p>		

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N / BA 4		Carrier Systems Development - 0603512N				Future Carrier R&D - 42208				
B. Other Program Funding Summary										
Related RDT&E:		<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Complete</u>	<u>Total Cost</u>
0604567N/42301 CV Contract Design										
CVN-77		40.502	65.791	91.690	35.566	9.406	3.764	0	0	246.719
CVNX		7.736	31.853	40.343	33.984	39.521	21.435	28.530	Cont.	Cont.
0603570N/S2692 Advance Nuclear Power Systems										
		98.302	105.175	146.609	136.658	122.664	121.948	121.058	448.217	1,370.049
Related SCN:										
200100 Carrier Replacement Program		4143.6	136.000	243.703	1262.908	397.916	417.377	2645.398	Cont.	Cont.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER Future Carrier R&D - 42208
<p>C. <u>Acquisition Strategy</u>: The Carrier acquisition strategy for CVNX will utilize a phased design and technology insertion or "evolutionary" strategy. This strategy will focus on combat system redesign (topside) on CVN77, new propulsion plant and Electro-Magnetic Aircraft Launching System (EMALS) on CVNX-1 and improvements in the area of aviation, survivability, service life restoration and Total Ownership Costs (TOC) reduction on both CVNX1 & CVNX2. On each hull, core capabilities will be maintained and TOC will be reduced in accordance with Carrier goals. As with previous NIMITZ class carriers, the CVN77 was awarded as a sole source Fixed Price Incentive Fee (FPIF) contract to Newport News Shipbuilding. For CVNX-1 and future hulls, early Integrated Product and Process Development (IPPD) design efforts will be cost type contracts with construction contracts anticipated to be FPIF similar to CVN 77.</p>		
D. Schedule Profile:	<u>FY 2001</u>	<u>FY 2002</u>
Program Milestones		CVNX: 4Q MSB
Engineering Milestones	EMALS: 3Q CDR	EMALS: 4Q Initiate Sys Instl @ LKE
T&E Milestones		
Contract Milestones		

R-1 SHOPPING LIST - Item No. 51-12 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 12 of 29)**UNCLASSIFIED**

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			Future Carrier R&D - 42208						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	13.727	16.513	N/A	20.077	11/01	15.078	11/02	Cont.	Cont.	Cont.
	CPAF	General Atomics	14.000	16.513	N/A	20.625	11/01	14.446	11/02	Cont.	Cont.	Cont.
	WR	NAWC Lakehurst, NJ	5.930	2.294	11/00	2.920	11/01	8.336	11/02	Cont.	Cont.	Cont.
	CPAF	NNS, VA		2.270	11/00	2.544	11/01	1.000	11/02	Cont.	Cont.	Cont.
		Miscellaneous	42.538	3.458				0.250	11/02			
Battle Damage & Recovery	WR	NSWC/CD, MD	3.831	3.408	12/00	3.400	11/01			Cont.	Cont.	Cont.
	WR	APG, MD			11/00		11/01			Cont.	Cont.	Cont.
	CPAF	NNS, VA	1.592	0.680	03/01	1.200	11/01			Cont.	Cont.	Cont.
	Various	Miscellaneous	1.511							Cont.	Cont.	Cont.
Propulsion Plant Development	SS,CPFP	BETTIS, PA	71.627	0.000	N/A					0.000	71.627	71.627
	C	NNS, VA		48.399	11/00	53.500	11/01	20.000	11/02		73.500	73.500
	Various	Miscellaneous	2.299	2.012	11/00	2.299	11/01	0.900	11/02			
Reverse Osmosis Desalination Plant	CPAF	NNS, VA				4.900	11/01	5.900	11/02	Cont.	Cont.	Cont.
	Various	Miscellaneous						0.413	11/02			
Manpower & Material Support	WR	NSWC/CD, MD	0.320								0.320	0.320
	Various	Miscellaneous	2.518								2.518	2.518
	C	Boeing, CA	0.800								0.800	0.800
Systems Development	CPAF	NNS, VA		4.906		2.077						
	WR	NSWC/CD, MD		3.528	12/00	0.675	11/01			Cont.	Cont.	
	Various	Miscellaneous	3.252	2.143								
Combat & Intelligence Systems	C	NNS, VA	9.261	0.000	N/A					Cont.	Cont.	Cont.
		Bath Iron Works	10.417	0.000	N/A					Cont.	Cont.	Cont.
ASW Tactical Decision Aids		Progeny, VA		1.500	03/01							
		NUWC KP		0.256								
	Various	Miscellaneous										
Smart Carrier	C	NNS, VA		0.205	12/00					Cont.	Cont.	Cont.
	Various	Miscellaneous		6.478	11/00	1.500	11/01	1.500	11/02	Cont.	Cont.	Cont.
CVNX Class Technologies	Various	Miscellaneous				5.000	11/01	1.177	11/02			
	WR	NSWC/CD, MD						4.278	11/02			
Subtotal Product Development			183.623	114.563		120.717		73.278		Cont.	Cont.	Cont.
Remarks:												
Development Support Equipment											0.000	
GFE											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-13 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 13 of 29)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			Future Carrier R&D - 42208						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Aircraft Launch, Recovery & Support	CPAF	Miscellaneous	0.713	0.706	11/00	1.517	11/01	7.017	11/02	Cont.	Cont.	Cont.
Operational Test & Evaluation												
Aircraft Launch, Recovery & Support												
Subtotal T&E			0.713	0.706		1.517		7.017		Cont.	Cont.	Cont.
Remarks:												
Contractor Engineering Support												
Program Management Support	CSS	TBD		4.002	11/00	0.250	11/01	0.000	11/02	Cont.	Cont.	Cont.
Systems Development	TBD			0.100	11/00	0.100	11/01	0.000	11/02			
Smart Carrier	TBD			0.541	11/00	0.500	11/01	0.500	11/02			
Travel				0.275		0.275		0.300				
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	4.918		1.125		0.800		Cont.	Cont.	Cont.
Remarks:												
Total Cost			184.336	120.187		123.359		81.095		Cont.	Cont.	Cont.
Remarks:												

R-1 SHOPPING LIST - Item No. 51-14 of 51-29

Exhibit R-3, Project Cost Analysis
 (Exhibit R-3, page 14 of 29)
UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2002

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N / BA 4	Carrier Systems Development - 0603512N				Carrier Systems Definition - 42693				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	13.818	33.134	0.000	0.000	0.000	0.000	0.000	Cont.	Cont.
RDT&E Articles Qty									

A. (U) Mission Description and Budget Item Justification: This project performs the Ship Feasibility Studies required after Milestone 0 (MS 0) to address a specific Mission Needs Statement (MNS) and support the Analysis of Alternatives (AOA) for the Future Carrier (CVNX) Program; performs impact studies of aircraft/air wing composition, propulsion, hull alternatives, combat systems, machinery and electrical subsystems, and cost on CVNX designs, supports the development of the Operational Requirements Document (ORD) and other documentation required at Milestone I. Completion of this phase allows review and approval, at Milestone I, to transfer a ship program to the Contract Design Program Element 0604567N. 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 Class F cost estimates.

- (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

FY 2001 ACCOMPLISHMENTS:

- (U) (\$0.819) Continued conducting ORD level requirements definition, industrial capability assessments, risk assessment and management, schedule development and tracking, and threat assessments necessary to insure a coordinated acquisition effort. Continued developing an Integrated Master Plan and the Test and Evaluation Master Plan. Continued development of logistics requirements including integrated logistics assessments, maintenance planning, supportability analysis, logistics process improvements, computer resource requirements analysis, and manpower/workload assessments. Continued developing cost model and baseline cost estimate.

- (U) (\$12.999) Continued conducting engineering effort associated with the CVNX Ship Development phase to develop ship requirements and definition at the total system level. Continued trade studies to support total ship definition including baseline design/build budget and baseline cost estimate. Further developed IPPD.

FY 2002 PLAN:

-(U) (\$33.134) Continue to conduct engineering effort associated with the CVNX Ship Development phase. Continue ship design definition to meet ORD Key Performance Parameters such as Service Life Allowance and Sortie Generation Rate. Conduct Total Ship Integration of the design changes required to the legacy baseline design to develop ship requirements and definition at the total system level. Further develop IPPD in support of Milestone B.

R-1 SHOPPING LIST - Item No. 51-15 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 15 of 29)

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CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N / BA 4		Carrier Systems Development - 0603512N				Carrier Systems Definition -- 42693				
B. Other Program Funding Summary										
Related RDT&E:		<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Complete</u>	<u>Total Cost</u>
0604567N/42301 CV Contract Design										
CVN-77		40.502	65.791	91.690	35.566	9.406	3.764	0	0	246.719
CVNX		7.736	31.853	40.343	33.984	39.521	21.435	28.530	Cont.	Cont.
0603570N/S2692 Advance Nuclear Power System										
		98.302	105.175	146.609	136.658	122.664	121.948	121.058	449.989	1,302.403
Related SCN:										
200100 Carrier Replacement Program		4143.6	136.000	243.703	1262.908	397.916	417.377	2645.398	Cont.	Cont.

R-1 SHOPPING LIST - Item No. 51-16 of 51-2930

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 16 of 29)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER Carrier Systems Definition - 42693		
<p>C. <u>Acquisition Strategy</u>: The Carrier acquisition strategy for CVNX will utilize a phased design and technology insertion or "evolutionary" strategy. This strategy will focus on combat system redesign (topside) on CVN77, new propulsion plant and Electro-Magnetic Aircraft Launching System (EMALS) on CVNX-1 and improvements in the area of aviation, survivability, service life restoration and Total Ownership Costs (TOC) reduction on both CVNX-1 & CVNX-2. On each hull, core capabilities will be maintained and TOC will be reduced in accordance with Carrier goals. As with previous NIMITZ class carriers, the CVN77 was awarded as a sole source Fixed Price Incentive Fee (FPIF) contract to Newport News Shipbuilding. For CVNX-1 and future hulls, early IPPD design efforts will be cost type contracts with construction contracts anticipated to be FPIF similar to CVN 77.</p>				
<p>D. Schedule Profile:</p> <table> <tr> <td><u>FY 2001</u></td> <td><u>FY 2002</u></td> </tr> </table>			<u>FY 2001</u>	<u>FY 2002</u>
<u>FY 2001</u>	<u>FY 2002</u>			
<p>Program Milestones</p> <table> <tr> <td></td> <td>CVNX: 4Q MS B</td> </tr> </table>				CVNX: 4Q MS B
	CVNX: 4Q MS B			
<p>Engineering Milestones</p> <table> <tr> <td>EMALS: 3Q CDR</td> <td>EMALS: 4Q Initiate Sys Instl @ LKE</td> </tr> </table>			EMALS: 3Q CDR	EMALS: 4Q Initiate Sys Instl @ LKE
EMALS: 3Q CDR	EMALS: 4Q Initiate Sys Instl @ LKE			
<p>T&E Milestones</p>				
<p>Contract Milestones</p>				

R-1 SHOPPING LIST - Item No. 51-17 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 17 of 29)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			Carrier Systems Definition - 42693						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	SS, CPFF	BETTIS, PA	35.372								35.372	
		AME, VA	6.851								6.851	
	C, CPFF	JJMA, VA	6.200								6.200	
	C, CPFF	NSWC/CD, MD	5.083			2.300	11/01				7.383	
	WR	NSWC/DD, VA	1.670								1.670	
	WR	Miscellaneous	12.329				11/01				12.329	
	Various	Miscellaneous	4.001	0.319	11/00	2.034	11/01				6.354	
	C	NNS	16.530	13.499	10/00	24.000	11/01				54.029	
	WR	NAWC Lakehurst, NJ	1.140								1.140	
	FP	Anteon, VA	0.000			4.800	11/01				4.800	
Subtotal Product Development			89.176	13.818		33.134					136.128	
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-18 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 18 of 29)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)							DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER							
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			Carrier Systems Definition - 42693							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation													
Operational Test & Evaluation													
Tooling													
GFE													
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													
Contractor Engineering Support													
Government Engineering Support													
Program Management Support													
Travel													
Labor (Research Personnel)													
Overhead													
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													
Total Cost			89.176	13.818		33.134		0.000		0.000	136.128		
Remarks:													

R-1 SHOPPING LIST - Item No. 51-19 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 19 of 29)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N / BA 4	Carrier Systems Development - 0603512N				CV Launch & Recovery Systems - W1723				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	ost to Comple	Total Cost
Project Cost	3.829	5.299	7.818	1.221	0.080	0.000	0.000	Cont.	Cont.
RDT&E Articles Qty		2							
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project addresses the development of systems providing approach and landing guidance, recovery, service, support, and launch of aircraft operating on or from ships. Payoffs include increased safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced manning, and increased aircraft service life. Specific programs include:</p> <ul style="list-style-type: none">- (U) Virtual Imaging System for Approach and Landing (VISUAL): VISUAL will provide the Landing Signal Officer (LSO) and other command personnel with enhanced images of the aircraft and ship in low visibility and night conditions during launch and recovery operations.- (U) Constant Run-Out Valve (CROV): The CROV program has been renamed the Aircraft Recovery Control (ARC) system. The system development effort will replace the existing control valve and valve actuation/control system on the MK7 arresting gear, providing enhanced performance and restoring margins of safety. This program addresses the near term solution to the CV(N) FY01 OAG's Number 12 priority item (arresting gear improvements).- (U) Advanced Arresting Gear Engine (AAGE) The AAG E replaces the MK7 arresting gear engine, which has reached the limits of its operating capability. This program represents the long term solution to the CV(N) FY01 OAG's Number 12 priority item (arresting gear improvements).- (U) Cost Reduction Effective Improvement Initiative (CREI) Arresting Gear Fairlead Sheaves: This program seeks to replace the arresting gear fairlead drive system sheaves with a more durable product that will have a longer service life thus decreasing system life cycle costs. <p>JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft application.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none">- (U) (\$1.370) ARC System - Developed draft system specifications and RFP.- (U) (\$2.117) AAG - Developed Analysis of Alternative system specification. Solicited industry participation and evaluated potential technologies capable of achieving system objectives. Prepared draft solicitation and milestone documentation. Provided engineering and management support to the program.- (U) (\$0.342) VISUAL - Completed evaluation of VISUAL "centerline camera" sensor candidates. Conducted laboratory evaluations and selected sensor configuration for incorporation in VISUAL EMD program. Selected best candidates for installation of prototype system in CVN flight deck and evaluated under controlled operational conditions.									

R-1 SHOPPING LIST - Item No. 51-20 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 20 of 29)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER CV Launch & Recovery Systems - W1723
<p>FY 2002 PLAN:</p> <p>- (U) (\$5.299) CROV/ARC - Complete SOW and systems specifications and release draft RFP to industry. Prepare milestone documentation and complete Milestone B. Award development contract. Conduct Preliminary Design Review (PDR) and Critical Design Review (CDR) . Program recategorized as ACAT IVM.</p> <p>FY 2003 PLAN:</p> <p>-(U) (\$7.595) ARC - Conduct Critical Design Review (CDR) and complete fabrication of two (2) PRM test articles. Deliver two PRM test articles and conduct developmental testing. Provide engineering and management support to the program.</p> <p>-(U) (0.223) CREI (Arresting Gear Fairlead Sheaves) - Select candidate materials and samples and conduct laboratory testing. Commence design and manufacture prototype CREI Sheaves.</p>		

R-1 SHOPPING LIST - Item No. 51-21 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 21 of 29)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification								DATE:
								February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER					PROJECT NAME AND NUMBER		
RDT&E, N	Carrier Systems Development - 0603512N					CV Launch & Recovery Systems - W1723		
(U) B. OTHER PROGRAM FUNDING SUMMARY:								
	FY 2001	FY 2002	FY2003	FY 2004	FY 2005	FY2006	FY2007	Total Cost
(U) (ALRE, OPN, 43SJ)	36.092	27.312	19.355	20.871	22.42	32.837	34.079	Continuing
Related RDT&E:								
(U) P.E. 0604512N (Shipboard Aviation Systems)								
(U) C. ACQUISITION STRATEGY:								
VISUAL: The Navy conducted system integration and risk reduction efforts at NAWCADLKE, including sensor and subsystem development and integration. Based on these efforts, a full system performance specification was prepared and an EDM contract was competitively awarded.								
ARC System: The Navy is preparing a performance specification for the valve actuation and control system and a build to print data package for the CROV valve. NAWCADLKE will serve as the prime contractor and competitively award contracts for the development, manufacture and production of the ARC components.								
CREI: A/G Fairlead Sheaves: Competitively award for sample materials and lab test samples for wear resistance, Down select to one material with one heat treatment process. Test this material on one engine of one ship on each coast. New fairlead sheaves will be installed by the fleet through attrition once tested and approved.								
(U) D. SCHEDULE PROFILE:								
	<u>FY 2001</u>		<u>FY 2002</u>		<u>FY 2003</u>		<u>TO COMPLETE</u>	
(U) Program Milestones								
(U) Engineering Milestones			ARC System: 2Q/02 PDR		CREI: 1Q/03 Design Prototype CREI: 3Q/03 CDR ARC System: 1Q/03 CDR			
(U) T&E Milestones					ARC System: 2Q/03 DT		CREI: 1Q/04 - 3Q/04 DT	
(U) Contract Milestones	ARC 4Q/01 RFP		ARC System: 1Q/02 EDM Award					

R-1 SHOPPING LIST - Item No. 51-22 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 22 of 29)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Carrier Systems Development - 0603512N			CV Launch & Recovery Systems - W1723						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ARC System Primary Hardware Dev.	WX	NAWCAD, Lakehurst	22.167	1.370	10/00	1.357	11/01	0.212	11/02	Continuing	Continuing	
ARC Primary Hardware Dev.	CPAF	TBD				3.942	01/02	4.651	11/02		8.593	8.609
AAGE Systems Engineering	WX	NAWCADLKE		2.117	10/00					Continuing	Continuing	
VISUAL Design, Manufacturing	C/FP	FIIR SYSTEMS		0.342	01/01						0.342	0.342
Subtotal Product Development			22.167	3.829		5.299		4.863		Continuing	Continuing	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-23 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 23 of 29)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Carrier Systems Development - 0603512N			CV Launch & Recovery Systems - W1723						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
ARC System Develop testing	WX	NAWCAD, Lakehurst						2.732	11/01	1.101	3.833	
CREI Devolp testing								0.223	11/02		0.223	
Subtotal T&E			0.000	0.000		0.000		2.955		1.101	4.056	
Remarks:												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			22.167	3.829		5.299		7.818		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 51-24 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 24 of 29)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N				PROJECT NAME AND NUMBER EAF Matting W2269				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	ost to Comple	Total Cost
Project Cost	5.077	0.843	0.000	0.000	0.000	0.000	0.000	0.000	19.618
RDT&E Articles Qty	2								2

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project addresses the Program Definition and Risk Reduction (PDRR) phase of the lightweight airfield mat and expeditionary arresting gear to meet naval aviation unique Expeditionary Airfield (EAF) operational requirements, including transportability requirements on Maritime Prepositioning Ships (MPS).

(U) The currently deployed EAF mat (AM-2) was developed for heavy fighter (such as the F-4) operations and is cumbersome to deploy. Lightweight (1/2 the weight of AM-2), less voluminous (1/2 the volume of AM-2), and easier to install (five days vice fifteen days to install a complete airfield) mat material may be technically feasible and commercially available, but must be evaluated for use with current type/model/series naval and Air Mobility Command (AMC) aircraft at conventional and Vertical and Short Take-off and Landing (V/STOL) airfields ashore. Candidate mat materials under consideration include reinforced synthetic composite materials and polyvinyl fiberglass. These mat materials will be configured and evaluated under Marine Corps operational scenarios.

(U) The expeditionary arresting gear program will provide the Marine Corps with the capability to conduct short span arrestments of designated Navy and Marine Corps tail hook equipped aircraft in the expeditionary environment. The current arresting gear (M-21) cannot be adapted to operate on short span (100 feet or less) surfaces and is incapable of arresting the current inventory under casualty (no flaps or half flap) conditions. The M-21 has inadequate reliability and several replacement components are no longer produced. The replacement gear, M-31, will provide air transportability, rapid setup, full inventory operational compatibility under all arrestment conditions, and adequate operational reliability. Two M-31 prototype systems will be built under this project.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft application.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2001 ACCOMPLISHMENTS:

- (U) (\$5.077) M-31: Delivered two Production Representative Models (PRMs) and initiated developmental testing (DT). Completed M-31 performance testing with deadloads. Provided engineering and management support to the program.

R-1 SHOPPING LIST - Item No. 51-25 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 25 of 29)

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CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE:	February 2002
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER			
RDT&E, N / BA 4		Carrier Systems Development - 0603512N			EAF Matting W2269			
<p>2 . FY 2002 PLANS:</p> <p>- (U) (\$0 .843) M-31: Demonstrate compatibility and performance thresholds with aircraft. Complete developmental testing (DT) and achieve Milestone III. Provide engineering and management support to the program.</p>								
(U) B. OTHER PROGRAM FUNDING SUMMARY:								
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	Total Cost
EAF OP,N (PE 0206139M)	3.203	7.445	7.540	7.718	7.867	8.104	8.182	Continuing

R-1 SHOPPING LIST - Item No. 51-26 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 26 of 29)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER Carrier Systems Development - 0603512N	PROJECT NAME AND NUMBER EAF Matting W2269															
<p>C. Acquisition Strategy: The advanced lightweight mat acquisition strategy envisions the solicitation of candidate material panels from commercial sources for evaluation in the laboratory and in the operational environment. Upon qualification of a viable material, limited production quantities will be procured for full scale environmental, performance, and operational testing. Production quantities will be procured from the commercial source in accordance with Marine Corps priorities.</p> <p>The M-31 arresting gear acquisition strategy is predicated on the creation of a fully integrated team consisting of Navy and contractor personnel. Initial technology development and system design effort will be shared between the partners. The commercial partner will take the lead in the prototype manufacturing effort; the Navy partner will lead the test effort; and the commercial partner will ultimately be tasked with system production.</p>																	
<p>D. Schedule Profile</p> <table> <thead> <tr> <th></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> </tr> </thead> <tbody> <tr> <td>Program Milestones</td> <td></td> <td>MS III 2Q 02</td> </tr> <tr> <td>Engineering Milestones</td> <td>2 prototype delivery 2Q/01</td> <td></td> </tr> <tr> <td>T&E Milestones</td> <td>M-31: DT 3Q/01 -2Q/02</td> <td>Final DT - 1Q/02-2Q/02</td> </tr> <tr> <td>Contract Milestones</td> <td></td> <td></td> </tr> </tbody> </table>				<u>FY 2001</u>	<u>FY 2002</u>	Program Milestones		MS III 2Q 02	Engineering Milestones	2 prototype delivery 2Q/01		T&E Milestones	M-31: DT 3Q/01 -2Q/02	Final DT - 1Q/02-2Q/02	Contract Milestones		
	<u>FY 2001</u>	<u>FY 2002</u>															
Program Milestones		MS III 2Q 02															
Engineering Milestones	2 prototype delivery 2Q/01																
T&E Milestones	M-31: DT 3Q/01 -2Q/02	Final DT - 1Q/02-2Q/02															
Contract Milestones																	

R-1 SHOPPING LIST - Item No. 51-27 of 51-29

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 27 of 29)

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			EAF Matting W2269						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	ESCO		2.825	11/00	0.519	11/01				3.344	3.344
Ancillary Hardware Development	WX	NAWCAD,LKE										
Award Fees	C/CPAF	ESCO				0.045	12/01				0.045	
Subtotal Product Development			0.000	2.825		0.564		0.000			3.389	
Remarks: None												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: None												

R-1 SHOPPING LIST - Item No. 51-28 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 28 of 29)

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Exhibit R-3 Cost Analysis (page 2)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA 4			Carrier Systems Development - 0603512N			EAF Matting W2269						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	WCAD, Lakehurst		2.252	11/00	0.279	11/01				2.531	
Subtotal T&E			0.000	2.252		0.279		0.000		0.000	2.531	
Remarks: N/A												
Subtotal Management			0.000	0.000		0.000		0.000		0.000		
Remarks: N/A												
Total Cost			0.000	5.077		0.843		0.000		0.000	5.920	
Remarks: N/A												

R-1 SHOPPING LIST - Item No. 51-29 of 51-29

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 29 of 29)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4				R-1 ITEM NOMENCLATURE Shipboard System Component Development/0603513N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	246.032	295.135	243.111	163.618	141.524	81.547	72.556	CONT.	CONT.
DC/Survivability/32465	(1) 0.000	(2) 4.991	5.792	6.928	6.671	4.569	2.488	CONT.	CONT.
AGS-Advanced Gun System/32467	96.297	139.031	108.184	52.158	47.736	47.878	47.995	CONT.	CONT.
Undersea Warfare (USW)/32468	20.058	25.315	20.546	16.812	13.764	13.342	8.977	CONT.	CONT.
Open Systems Architecture (OSA) ³ /32469	21.017	(4) 5.556	4.600	3.945	3.656	2.704	2.200	CONT.	CONT.
Integrated Topside Design (ITD)/32470	15.775	(5) 5.348	4.224	3.886	3.795	2.969	0.987	CONT.	CONT.
Integrated Power Systems (IPS)/32471	84.874	105.577	99.765	79.889	65.902	10.085	9.909	CONT.	CONT.
Man Overboard Indicator/32729	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.250
MTTC/IPI/32858	6.761	5.947	0.000	0.000	0.000	0.000	0.000	0.000	12.708
Automated Maintenance Environment/39038	0.000	3.370	0.000	0.000	0.000	0.000	0.000	0.000	3.370
Quantity of RDT&E Articles	0	0	*2/TBD	0	0	0	0	CONT.	CONT.
Notes: (1) (U) In FY 2001, funding for this project is contained in PE 0604300N, DD (X) Total Ship Systems Engineering. (2) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to DD (X) Design (PE 0604300N, Project 32464) in FY 2002 and out. Funding for efforts supporting the development of DD (X) ship survivability and auxiliary systems has been reprogrammed to this project from Project 32469 in FY 2002 and out. (3) Project formerly known as Consolidated Hull, Mechanical, and Electrical (HM&E). (4) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to DD (X) Design (PE 0604300N, Project 32464) in FY 2002 and out. Funding for efforts supporting the development of DD (X) ship survivability and auxiliary systems has been reprogrammed from this project to Project 32465 in FY 2002 and out. (5) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to PE 0604300N, Project 32464 in FY 2002 and out.									
* (U) For explanation of Test Articles see Project 32467.									

R-1 SHOPPING LIST - Item No. 52-1 of 52-41

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 41)

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EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

February 2002

APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4

R-1 ITEM NOMENCLATURE

Shipboard System Component Development/0603513N

A. (U) Mission DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) was modified in FY 2000 and out to focus on DD (X) associated systems development. Specific DD (X) associated systems development efforts that were realigned under this PE include: the Advanced Gun Systems; Undersea Warfare; Integrated Topside Design; and Integrated Power Systems. In addition, a number of HM&E development tasks were incorporated into a the Open Systems Architecture Project (32469) focused on DD (X). In FY 2001, PEO (S) was provided funding to perform Manufacturing Technology (MANTECH) studies at the McConnellTechnology Transition Center, operated by Innovative Productivity, Inc. (MTTC/IPI). The funds will be used to establish the National Surface Treatment Center which will collect and disseminate surface coating systems application and performance data, qualify surface coating systems for military applications, and develop new coating systems. Funding was also provided to complete engineering, testing, and evaluation of commercial Man Overboard Indicator (MOBI)/Personal Tracking Monitoring System (PTMS) devices. In FY 02, Automated Maintenance Environment focuses on connecting ships with other ships in a battle group via wireless networks, and connecting the battle group with the shore-based facility for routing to support services.

(U) In FY 2002 and out, DD (X) design and systems integration elements of Open Systems Architecture (Project 32469) and Integrated Topside Design (Project 32470) were reprogrammed to PE 0604300N, Project 32464. Also in FY 2002 and out, ship survivability and auxiliary system elements of Project 32469 were moved to Project 32465, and Project 32465 was reprogrammed to this PE. This PE focuses on the development of shipboard system components for the DD (X) Class of U. S. Navy surface combatants. The mission of the DD (X) class is to provide affordable and credible independent forward presence/deterrence and operate as an integral part of Naval, Joint, or Combined Maritime Forces. DD (X) will provide advanced land attack capability in support of the ground campaign and contribute to Naval, Joint, or Combined battlespace dominance in littoral operations. It will establish and maintain surface and sub-surface superiority, provide local air defense, and incorporate signature reduction to operate in all threat environments. DD (X) will have seamless Joint Interoperability to integrate all source information for battlespace awareness and weapons direction.

R-1 SHOPPING LIST - Item No. 52-2 of 52-41

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 41)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE Shipboard System Component Development/0603513N																					
<p>B. (U) PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 15%; text-align: center; border-bottom: 1px solid black;">FY 2001</th> <th style="width: 15%; text-align: center; border-bottom: 1px solid black;">FY 2002</th> <th style="width: 35%; text-align: center; border-bottom: 1px solid black;">FY 2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: center;">256.065</td> <td style="text-align: center;">288.382</td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: center;">258.437</td> <td style="text-align: center;">297.782</td> <td></td> </tr> <tr> <td>(U) Adjustment's to FY 2002/2003 Appropriated Value/FY 2002 President's Budget:</td> <td style="text-align: center;">-10.033</td> <td style="text-align: center;">+6.753</td> <td></td> </tr> <tr> <td>(U) FY 2003 President's Budget Submit:</td> <td style="text-align: center;">246.032</td> <td style="text-align: center;">295.135</td> <td style="text-align: center;">243.111</td> </tr> </tbody> </table> <p style="margin-top: 20px;">(U) Funding: The FY 2001 decrease of \$10.033M is due to Small Business Innovative Research(SBIR) reductions (-\$6.420M) and programmatic adjustments (-\$3.613M). The FY 2002 increase of \$6.753M is due to Congressional increases for the McConnell Technology Transfer Center (+\$6.000M) and Automated Maintenance Environment (+\$3.400M); Section 8123 Managment Reform Initiatives (-\$2.633M); and minor adjustment (-\$.014M).</p> <p>(U) Schedule: See individual projects</p> <p style="margin-top: 20px;">(U) Technical Parameters: Technical parameters are contained in the DD (X) Operational Requirements Document (ORD) approved by JROC on 16 October 1997.</p>				FY 2001	FY 2002	FY 2003	(U) FY 2002 President's Budget:	256.065	288.382		(U) Appropriated Value:	258.437	297.782		(U) Adjustment's to FY 2002/2003 Appropriated Value/FY 2002 President's Budget:	-10.033	+6.753		(U) FY 2003 President's Budget Submit:	246.032	295.135	243.111
	FY 2001	FY 2002	FY 2003																			
(U) FY 2002 President's Budget:	256.065	288.382																				
(U) Appropriated Value:	258.437	297.782																				
(U) Adjustment's to FY 2002/2003 Appropriated Value/FY 2002 President's Budget:	-10.033	+6.753																				
(U) FY 2003 President's Budget Submit:	246.032	295.135	243.111																			

R-1 SHOPPING LIST - Item No. 52-3 of 52-41

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 3 of 41)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER DC/Survivability/32465				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	(1) 0.000	(2) 4.991	5.792	6.928	6.671	4.569	2.488	CONT.	CONT.
RDT&E Articles Qty	0	0	0	0	0	0	0	CONT.	CONT.

Notes: (1) (U) In FY 2000 and 2001, funding for this project is contained in PE 0604300N, DD (X) Total Ship Systems Engineering, Project 32465.
 (2) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to DD (X) Design (PE 0604300N, Project 32464) in FY 2002 and out. Funding for efforts supporting the development of DD (X) ship survivability and auxiliary systems has been reprogrammed to this project from Open Systems Architecture (Project 32469) in FY 2002 and out.

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

(U) System development areas include: 1) automated degaussing control system that maintains a reduced, constant electromagnetic signature level for an extended deployment and provides on-board, real-time, tactical information on safe operating areas; 2) underwater shock and acoustic main machinery isolation systems that use rafting and advanced mounts to provide increased survivability while operating in littoral environments; 3) ship design modeling and simulation program that predicts the vulnerability and recoverability response time of the ship, systems, and crew to primary and secondary weapons effects 4) damage tolerant structures that increase hull girder survival against close-in underwater explosions; 5) advanced damage control (DC) and auxiliary system architectures and control methods that enable automated isolation, reconfiguration and fire suppression actions after damage; 6) personnel protection devices that reduce stress and increase performance; and 7) portable firefighting devices that provide for remote operation with a minimally manned fire party.

1. (U) FY 2001 ACCOMPLISHMENTS:
 - Budgeted in PE 0604300N, Project 32465.

R-1 SHOPPING LIST - Item No. 52-4 of 52-41

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 4 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER DC/Survivability/32465

2. (U) FY 2002 PLAN

- (U) (\$1.500)-Initiate Spiral Design Study to assess surface combatant force capabilities and to conduct survivability assessments.
- (U) (\$ 0.561) Continue development of survivable electrical system architectures/components that enable uninterrupted damage control operations and continued combat capability after damage. Develop hardware and software requirements for a fault-clearing device that rapidly isolates the damaged portion of the system preventing loss of power and darkened ship conditions. Prepare software development plan.
- (U) (\$ 0.581) Initiate development of survivable automated firefighting systems including control methods, networks, piping architectures and suppression techniques that enable automated isolation, reconfiguration and fire suppression following damage. Initiate plans for demonstrating the survivability of a candidate automated fire suppression system architecture under realistic live ordnance and shipboard conditions.
- (U) (\$ 0.400) Initiate development of electronics and machinery isolation systems (structural support raft and shock/acoustic mounts) that enable continued operation after close-in underwater explosion and provide for acoustic quieting. Develop an advanced shock and acoustic mount concept that provides for an ultra shock low environment ensuring a very high probability of equipment survival.
- (U) (\$0.850) Continue demonstration of real-time, closed loop degaussing control system aboard USS Higgins, DDG 76. Deperm the USS Higgins and recalibrate the system for maintaining a low magnetic signature. Monitor stability of control algorithm/ system and conduct ranging. (This is a transition of effort from PE/Project 63513N/32469.)
- (U) (\$ 0.609) Continue development of the ship survivability design modeling and simulation program, Advanced Survivability Assessment Program (ASAP). Complete development of crew casualty and electrical models. (This is a transition of effort from PE/Project 63513N/32469.)
- (U) (\$0 .490) Close-out the composite pump development contract.

3. (U) FY 2003 PLAN

- (U) (\$1.100) Continue development of survivable electrical system architectures/components. Develop control logic for rapidly isolating a fault and integrate software with commercial control system technology; conduct laboratory demonstration. Develop live ordnance test plan for evaluating performance against a broad range of attack (fault) scenarios.
- (U) (\$1.100) Continue development of survivable automated fire fighting systems. Conduct live ordnance survivability demonstrations.

R-1 SHOPPING LIST - Item No. 52-5 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 41)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER DC/Survivability/32465					
<p>- (U) (\$1.325) Continue development of shock and acoustics isolation systems for electronics/machinery. Conduct an underwater explosion shock test employing a raft, shock mounts and representative machinery/electronic equipment to demonstrate equipment survivability. Evaluate acoustic response of mounts and conduct accelerated aging tests to demonstrate mount suitability in a harsh machinery space environment.</p> <p>- (U) (\$1.167) Continue to monitor the stability of the closed loop degaussing system control algorithm/ system; conduct rangings. Initiate development of a real-time tactical decision aid that provides safe operating areas as a function of mine threat.</p> <p>- (U) (\$1.100) Continue development of the ASAP program. Initiate verification and validation and development of new weapons effect and recoverability models.</p> <p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p>											
COST (\$ in Millions)			FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
DD (X) Total Ship Systems Engineering/0604300N			286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.
<p>C. (U) ACQUISITION STRATEGY:</p>											

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER DC/Survivability/32465
D. (U) SCHEDULE PROFILE:		
<u>FY 2001</u> See PE 0604300N Exhibits	<u>FY 2002</u> 3Q- Closed Loop Degaussing Ranging 4Q - Survivable Electrical Power Software Development Plan 4Q- Shock and Acoustic Mount 4Q- ASAP DC and Electrical Models	<u>FY 2003</u> 2Q - Automated Fire Suppression Demonstration 3Q - Electrical Control Logic 4Q - Underwater Explosion Shock Test 4Q - ASAP V&V Documentation

R-1 SHOPPING LIST - Item No. 52-7 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 41)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER				
RDTE&E, N/BA-4			Shipboard Sys Component Dev/0603513N			DC/Survivability/32465				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPIF	DD(X) Design Agent	0.000	1.500	3QFY 02	0.000	N/A	0.000	1.500	
Ancillary Hardware Development										
Systems Engineering										
Product Development										
	WR	NSWC CD Bethesda, MD	4.515	3.416	02/02	5.267	11/02	CONT.	CONT.	
	Various	Other Contractors	5.251	0.000	N/A	0.450	Various	CONT.	CONT.	
Subtotal Product Development			9.766	4.916		5.717		CONT.	CONT.	
Remarks: See PE 0604300N, Project 32465 Exhibits for FY 01 information.										
Development Support Equipment										
Software Development										
Training Development										
Integrated Logistics Support										
Configuration Management										
Technical Data										
GFE										
Subtotal Support			0.000	0.000		0.000		0.000	0.000	
Remarks:										

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER DC/Survivability/32465				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation										
Operational Test & Evaluation										
Tooling										
GFE										
Subtotal T&E			0.000	0.000		0.000		0.000	0.000	
Remarks:										
Contractor Engineering Support										
Government Engineering Support										
Program Management Support	WR	NSWC CD Bethesda, MD		0.075	02/02	0.075	11/02	CONT.	CONT.	
Travel										
Labor (Research Personnel)										
Overhead										
Subtotal Management			0.000	0.075		0.075		CONT.	CONT.	
Remarks: See PE 0604300N, Project 32465 Exhibits for FY 01 information.										
Total Cost			9.766	4.991		5.792		CONT.	CONT.	
Remarks: See PE 0604300N, Project 32465 Exhibits for FY 01 information.										

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Shipboard Sys Component Dev/0603513N			AGS-Advanced Gun System/32467					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		96.297	139.031	108.184	52.158	47.736	47.878	47.995	CONT.	CONT.
RDT&E Articles Qty		0	0	2	0	0	0	0	CONT.	CONT.
A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: These funds provide for the development of the Advanced Gun System (AGS) associated with the development of DD (X). The AGS will consist of a major caliber gun, an automated ammunition handling system, and a family of munitions/propelling charges. The AGS will, at a minimum, meet the Land Attack and Surface Dominance Missions assigned to the gun system. The system will provide a high rate of fire (approximately 12 rounds per minute) with a magazine capacity sufficient in size for meeting USMC operational requirements. Land based testing of Engineering Development Model (EDM) hardware components to verify system design will commence in FY 2003.										
1. (U) FY 2001 ACCOMPLISHMENTS: <ul style="list-style-type: none">- (U) (\$60.502) Completed AGS Sub-system design phase.- (U) (\$16.288) Initiated Risk Reduction Phase for AGS munitions; completed AGS munitions concepts; developed performance and interface specifications.- (U) (\$5.141) Continued EDM text fixture development.- (U) (\$14.366) Continued with the development of Validation and Verification (V&V) tools for AGS and AGS munitions.										
2. (U) FY 2002 PLAN: <ul style="list-style-type: none">- (U) (\$26.635) Initiate AGS System design and DD(X) Spiral Design Study.- (U) (\$57.708) Commence EDM fabrication for Gun, magazine, and Control system.- (U) (\$34.237) Continue Risk Reduction Phase for AGS Long Range Land Attack Projectile (LRLAP).- (U) (\$17.751) Validate and verify the suitability and effectiveness of V&V tools for AGS and AGS munitions.- (U) (\$ 2.700) Continue EDM test fixture development.										

R-1 SHOPPING LIST - Item No. 52-10 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 10 of 41)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002																							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER AGS-Advanced Gun System/32467																								
<p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$24.359) Continue AGS System detailed design and DD(X) Spiral Design Study. - (U) (\$62.000) Continue EDM fabrication for Gun, magazine, and Control system. - (U) (\$9.475) Complete Risk Reduction Phase for AGS Long Range Land Attack Projectile (LRLAP). - (U) (\$12.350) Initiate LRLAP Engineering and Manufacturing Development. <p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">COST (\$ in Millions)</th> <th style="text-align: center;">FY 2001</th> <th style="text-align: center;">FY 2002</th> <th style="text-align: center;">FY 2003</th> <th style="text-align: center;">FY 2004</th> <th style="text-align: center;">FY 2005</th> <th style="text-align: center;">FY 2006</th> <th style="text-align: center;">FY 2007</th> <th style="text-align: center;">To Complete</th> <th style="text-align: center;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>DD (X) Total Ship Systems/Engineering/0604300N</td> <td style="text-align: center;">286.444</td> <td style="text-align: center;">235.235</td> <td style="text-align: center;">717.397</td> <td style="text-align: center;">923.649</td> <td style="text-align: center;">1354.041</td> <td style="text-align: center;">1705.084</td> <td style="text-align: center;">1311.339</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> </tbody> </table> <p>C. (U) ACQUISITION STRATEGY:</p> <p>(U) The Navy conducted a comparison of concepts for the DD (X) Advanced Gun System, the results of which were reported to Congress by SECNAV on 10/99. The Advanced Gun System will be acquired in conjunction with the DD (X) development schedule. Initial phases will be conducted under section 845/804 other transaction authority. Initial phases include: Phase I – Concept Formulation, Phase II - Initial Prototype Development, Phase III - Subsystem Testing and Validation.</p>										COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost	DD (X) Total Ship Systems/Engineering/0604300N	286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost																				
DD (X) Total Ship Systems/Engineering/0604300N	286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.																				

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EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2002

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N/BA-4

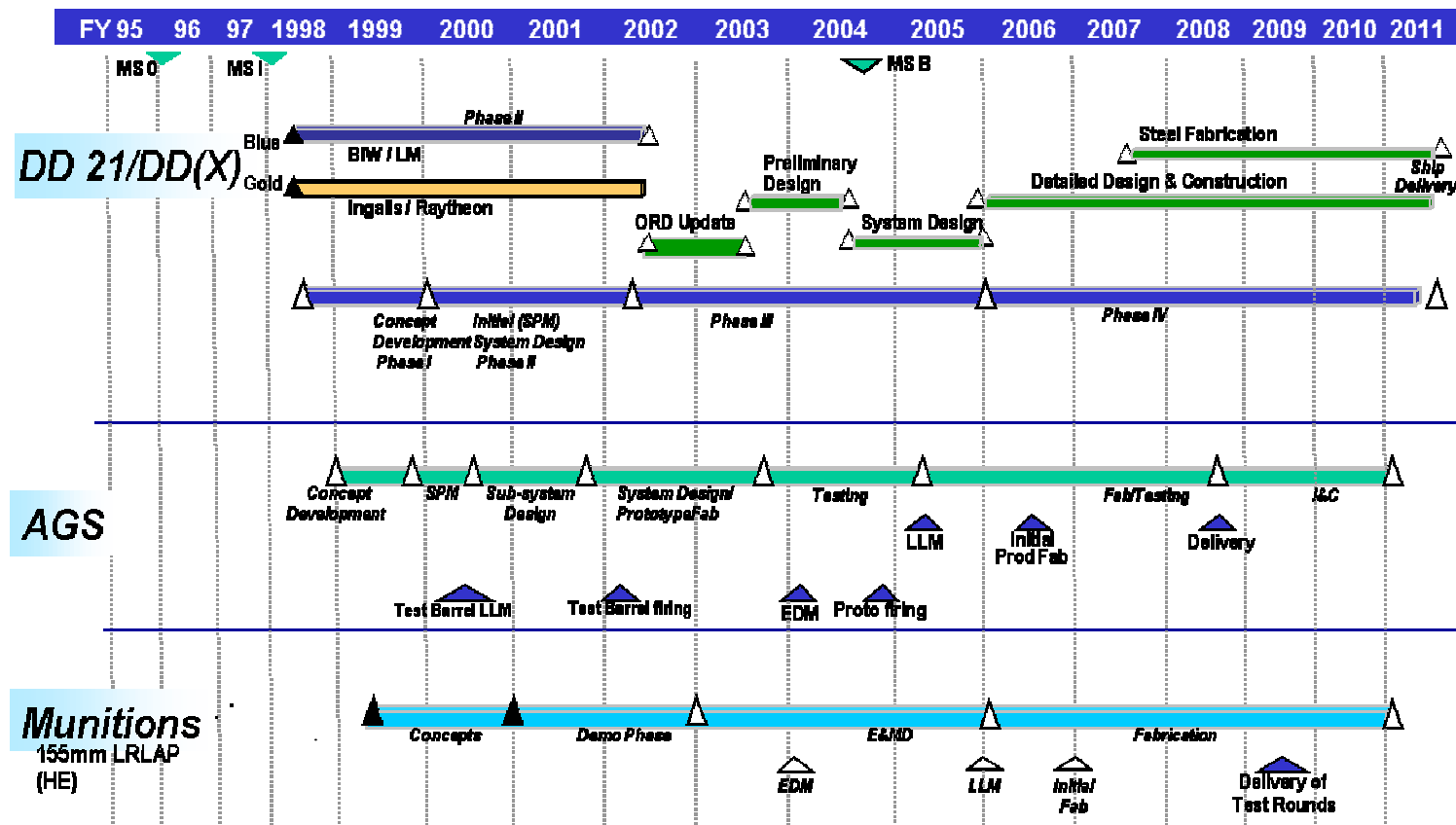
PROGRAM ELEMENT NAME AND NUMBER

Shipboard Sys Component Dev/0603513N

PROJECT NAME AND NUMBER

AGS-Advanced Gun System/32467

D. (U) SCHEDULE PROFILE:



R-1 SHOPPING LIST - Item No. 52-12 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 12 of 41)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			AGS-Advanced Gun System/32467						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Sec845/804 CPIF	DD (X) Industry Teams DD (X) Design Agent	34.866 0.000	90.661 0.000	Various N/A	20.500 95.000	Various 3QFY02	0.000 95.000	N/A 1QFY03	0.000 CONT.	146.027 CONT.	N/A
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			34.866	90.661		115.500		95.000		CONT.	CONT.	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RD&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			AGS-Advanced Gun System/32467						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: (U) No developmental or operational evaluation is scheduled during this period.												
Contractor Engineering Support	GSA/FFP	Anteon Arlington, VA	0.000	0.320	11/00	5.500	02/02	4.000	10/02	CONT.	CONT.	CONT.
	Various	Other Contractors	0.000	0.120	10/00	5.000	Various	1.322	10/02	CONT.	CONT.	CONT.
Government Engineering Support	WR	NSWC DD Dahlgren, VA	3.568	3.137	10/00	6.000	02/02	3.050	10/02	CONT.	CONT.	CONT.
	WR	NSWC PHD Pt Hueneme, CA	1.664	1.909	10/00	2.000	02/02	1.705	10/02	CONT.	CONT.	CONT.
	WR	Other Gov't activities	2.284	0.150	Various	5.031	Various	3.107	Various	CONT.	CONT.	CONT.
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			7.516	5.636		23.531		13.184		CONT.	CONT.	
Remarks:												
Total Cost			42.382	96.297		139.031		108.184		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 52-14 of 52-41

Exhibit R-3, Project Cost Analysis
 (Exhibit R-3, page 14 of 41)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER Undersea Warfare (USW)/32468					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		20.058	25.315	20.546	16.812	13.764	13.342	8.977	CONT.	CONT.
RDT&E Articles Qty		0	0	0	0	0	0	0	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Undersea Warfare (USW) project provides advanced development demonstration and validation of technology through a build-test-build process for potential surface sonar and combat system application. Efforts focus on resolution of technical issues associated with providing capability against the year 2010 and beyond threat with emphasis on shallow water/littoral area USW and on Demonstration and Validation (DEM/VAL) of DD (X) Integrated Undersea Warfare (IUSW-21) Advanced Development Model (ADM). Key technology areas being investigated include: improvements in signal processing, advanced information processing, and multi-sensor data fusion to improve target detection and classification performance and reduce system manning requirements; and towed array, hull array and transducer technology to improve multi-static operation and in-stride mine avoidance. FY 2001 and subsequent efforts will focus on major technological and performance thrusts for DD (X) USW, which will define surface combatant USW capability for the Navy in the next century. These efforts will continue beyond DD (X) and provide improvements that apply across surface ship USW platforms.

1 (U) FY 2001 ACCOMPLISHMENTS

- (U) (\$2.637) DD (X) Industry Teams - Continued DD (X) USW system design. Participated in IUSW peer group and evaluated USW technologies. Started preparations for FY 02 ADM At-Sea test.
- (U) (\$2.598) IUSW-21 Broad Agency Announcement (BAA) risk reduction contracts/tasks - Exercised FY01 option of BAAs awarded in FY99 and other risk reduction efforts to further define advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning. Started integration of BAAs into the ADM for the FY02 at sea demonstration.
- (U) (\$12.999) IUSW 21 ADM Development - Performed Integrated Peer Group (IPG) engineering reviews of IUSW-21 advanced technologies. Began development and integration of IUSW-21 advanced technologies into ADM demonstration system. Finalized ADM interface specifications and sea test demonstration plan.
- (U) (\$1.824) FY02 Sea Test - Conducted installation planning and started development of TEMPALT package. Began Preparation of equipment, buy hardware to integrate Multi-Function Towed Array (MFTA) into ADM.

R-1 SHOPPING LIST - Item No. 52-15 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 15 of 41)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER Undersea Warfare (USW)/32468					
<p>2. (U) FY 2002 PLAN</p> <ul style="list-style-type: none"> - (U) (\$4.852) IUSW-21 Risk reduction contracts/tasks - Finish integration of FY99 BAAs into the ADM. Award BAA contracts to support the build-test-build process and the FY04 sea test. BAAs will further define advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning. - (U) (\$15.237) IUSW-21 ADM Development - Perform IPG engineering reviews of IUSW-21 advanced technologies. Finish the development and integration of IUSW-21 advanced technologies into ADM demonstration system for FY02 sea test. Begin development of IUSW-21 advanced technologies for the FY04 sea test. - (U) (\$5.226) FY02 Sea Test - Finish equipment preparation and integrate Multi-Function Towed Array (MFTA) into ADM. Ship and install equipment. Conduct Test. Collect data. <p>3. (U) FY 2003 PLAN</p> <ul style="list-style-type: none"> - (U) (\$4.307) IUSW-21 Risk reduction contracts/tasks - Start integration of BAAs to support the build-test-build process and the FY04 sea test. BAAs will further define advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning. - (U) (\$13.489) IUSW-21 ADM Development - Perform IPG engineering reviews of IUSW-21 advanced technologies. Continue development and integration of IUSW-21 advanced technologies into ADM demonstration system for FY04 sea test. - (U) (\$2.750) FY02 Sea Test - Remove and ship back equipment. Refurbish ship. Begin data analysis. <p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p>										
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
DD (X) Total Ship Systems/Engineering/0604300N		286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.

R-1 SHOPPING LIST - Item No. 52-16 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 16 of 41)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Undersea Warfare (USW)/32468
<p>C. (U) ACQUISITION STRATEGY:</p> <p>(U) In Contracting Phase I and II, DD (X) used Section 845/804 agreement authority for the efforts conducted by the DD (X) Industry Teams. BAAs will be competitively awarded to further refine advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning to provide further risk mitigation for DD (X) USW activities. In Contract Phase III responsibility for IUSW-21 ADM development for the FY04 and FY05 sea tests will be with the DD (X) Design Agent (DA).</p>		

R-1 SHOPPING LIST - Item No. 52-17 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 17 of 41)

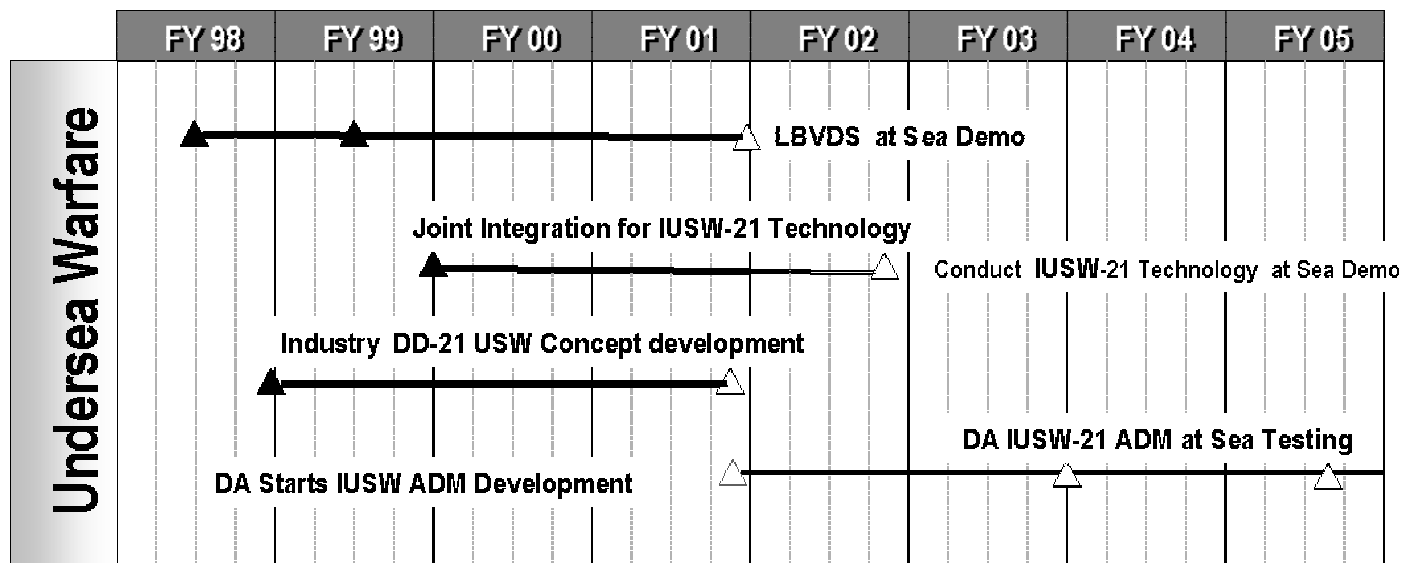
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Undersea Warfare (USW)/32468

D. (U) SCHEDULE PROFILE:



R-1 SHOPPING LIST - Item No. 52-18 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 18 of 41)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Undersea Warfare (USW)/32468						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Sec845/804	DD (X) Industry Teams	8.467	2.637	11/00	0.000	N/A	0.000	N/A	0.000	11.104	
	CPIF	DD (X) Design Agent	0.000	0.000	N/A	4.000	3QFY02	11.000	1QFY03	CONT.	CONT.	
	BAA/CPFF	Competition	10.801	2.598	Various	0.852	Various	4.307	Various	CONT.	CONT.	
Ancillary Hardware Development												
Systems Engineering (ADM Development)	C/CPFF	LMC, Syracuse, NY	0.813	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.813	
	C/CPFF	RSC, Newport, RI	0.827	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.827	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			20.908	5.235		4.852		15.307		CONT.	CONT.	
Remarks:												
Development Support Equipment												
Software Development (ADM Development)	C/CPFF	LMC, Syracuse, NY	0.000	5.842	11/00	5.257	01/02	0.000	N/A	CONT.	CONT.	
	C/CPFF	RSC, Newport, RI	0.000	4.807	11/00	5.509	01/02	0.000	N/A	CONT.	CONT.	
Training Development												
Integrated Logistics Support												
Configuration Management												
Engineering Support	WR	NUWC/N Newport, RI	2.078	1.140	11/00	1.159	02/02	0.667	12/02	CONT.	CONT.	
	WR	Other Gov't Activities	0.350	0.510	11/00	0.150	02/02	0.150	12/02	CONT.	CONT.	
	SS/CPFF	APL/JHU Laurel, MD	0.688	0.150	11/00	0.030	02/02	0.150	12/02	CONT.	CONT.	
	SS/CPFF	APL/UW Seattle, WA	0.250	0.150	11/00	0.075	02/02	0.150	12/02	CONT.	CONT.	
	SS/CPFF	ARL/UT Austin., TX	0.300	0.150	11/00	0.075	02/02	0.150	12/02	CONT.	CONT.	
	SS/CPFF	ARL/PSU State Col, PA	0.216	0.150	11/00	0.075	02/02	0.150	12/02	CONT.	CONT.	
GFE												
Subtotal Support			3.882	12.899		12.330		1.417		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 52-19 of 52-41

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 19 of 41)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Undersea Warfare (USW)/32468						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC/N Newport, RI	0.000	0.824	11/00	4.696	02/02	1.250	12/02	CONT.	CONT.	
	SS/CPFF	APL/JHU Laurel, MD	0.000	1.000	11/00	0.530	02/02	0.000	N/A	0.000	1.530	
	C/CPFF	TBD						1.500	12/02	CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	1.824		5.226		2.750		CONT.	CONT.	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WR	Other Gov't Activities	0.000	0.000	N/A	0.735	02/02	0.000	N/A	CONT.	CONT.	
Program Management Support	GSA/FFP	Anteon Arlington, VA	0.331	0.100	12/00	1.504	02/02	0.722	12/02	CONT.	CONT.	
Miscellaneous	PD/WR	Other Gov't Activities	0.091	0.000	Various	0.668	Various	0.350	Various	CONT.	CONT.	
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.422	0.100		2.907		1.072		CONT.	CONT.	
Remarks:												
Total Cost			25.212	20.058		25.315		20.546		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 52-20 of 52-41

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 20 of 41)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Shipboard Sys Component Dev/0603513N			Open Systems Architecture (OSA) ¹ /32469					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		21.017	(2) 5.556	4.600	3.945	3.656	2.704	2.200	CONT.	CONT.
RDT&E Articles Qty		0	0	0	0	0	0	0	CONT.	CONT.
<p>Notes: (1) (U) Project formerly known as Consolidated Hull Mechanical and Electrical (HM&E)</p> <p>(2) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to the DD (X) Design line (PE 0604300N, Project 32464) beginning in FY 2002. Funding for efforts supporting the development of DD (X) ship survivability and auxiliary systems has been reprogrammed from this project to the DC/Survivability line (PE 0603513N, Project 32465) beginning in FY 2002.</p> <p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In FY 2001, this project supports the advanced development of DD (X) HM&E ship survivability, auxiliary machinery and, Open Systems Architecture (OSA) technologies. This project also supports several fleet-focused research and development efforts. Beginning in FY 2002, DD (X) design and systems integration elements of this project have been shifted to PE 0604300N, Project 32464, and ship survivability and auxiliary system elements were moved to PE 0603513N, Project 32465. As a result, beginning in FY 2002, this project will focus on the development of open systems architecture for PEO(S), with the efforts for several fleet-focused initiatives continuing as well. The following provides a mission description for each major development area (i.e., Survivability, Fleet-Focused Initiative (FFI), and Open Systems Architecture (OSA):</p> <p>(U) Survivability: The survivability area supports development of systems and protection concepts that reduce vulnerability to conventional weapons and peacetime accidents and enables, under reduced manning conditions, a rapid recovery of mission capability. Development categories include damage control computer-based systems that provide for rapid systems restoration, fire protection devices that improve probability of ship survival with a reduced crew, and ship protection concepts that reduce magazine and commercial equipment vulnerability.</p> <p>(U)Fleet-Focused Initiative (formerly known as Auxiliary): For existing and future ships, this funding: 1) improves reliability/maintainability of fluid, electrical, and mechanical systems and 2) supports reduced manning through automation of operational, maintenance, and day-to-day functions traditionally performed by the crew, and supports development of auxiliary systems to reduce ship magnetic signature and vulnerability to mines.</p> <p>(U) Open Systems Architecture (formerly known as Affordability Through Commonality): This funding supports the PEO (S) implementation of open systems architecture (OSA) at the total system/ship level. Open Systems Architecture 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 OSA into total ship acquisition.</p>										

R-1 SHOPPING LIST - Item No. 52-21 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 21 of 41)

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469
<p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <p>(U) SURVIVABILITY/AUXILIARY SYSTEMS:</p> <ul style="list-style-type: none"> - (U) (\$2.519) Continued development of the time-dependent, computer-based ASAP for use in evaluating ship designs. Continued development of the ASAP crew casualty/damage control model. Continued full scale testing aboard the DDG 76 of the advanced closed loop degaussing system; updated prediction algorithm. Continued development of advanced auxiliary systems, components, and control systems. - (U) (\$8.391) Completed initial system design and engineering of DD (X) survivability/auxiliary systems. Began system/subsystem development of survivability/auxiliary systems. <p>(U) OPEN SYSTEMS ARCHITECTURE:</p> <ul style="list-style-type: none"> - (U) (\$0.925) TOSA Business Architecture, Process, Impact Assessments: Continued development with Industry of TOSA architectures, framework, and processes for Fleet wide implementation of open systems architecture in support of future DD (X) use. Continued development of new business architecture, business case analyses, and strategies for TOSA implementation for cross-platform application. Documented metrics to assess system architecture openness for technology upgradability and competition. Completed prioritization with Industry of high payoff opening candidates. - (U) (\$0.995) Total Open Systems Architecture Implementation: Transitioned TOSA concepts with Industry to the existing and future Fleet in support of future DD (X) use. Completed the engineering development of Open C4ISR Zone concepts for surface combatants and implementation in support of future DD (X) use. Completed development of architecture concepts for open sensor interfaces for surface combatants. Completed development of architecture interface requirements for Advanced TOSA concepts selected with Industry for surface combatants. - (U) (\$5.439) Completed Total Ship OSA Concept Demonstration and Validation for DD (X) Initial System Design. <p>(U) FLEET-FOCUSED INITIATIVES:</p> <p>(U) FUEL CELL</p> <ul style="list-style-type: none"> - (U) (\$0.474) Completed design and initiate fabrication of 0.5 MW reduced scale demonstrator. Used current designator, initiate ship impact assessment and cost analysis of Ship Service Fuel Cell(SSFC) for notional ships and compare with IPS baseline. <p>(U) SALVAGE AND UNDERWATER SHIP HUSBANDRY</p> <ul style="list-style-type: none"> - (U) (\$0.379) Continued development of the Smart Tow Monitoring System and materials to be used in the Improved Shaft Coating System. <p>(U) TOC Initiatives</p> <ul style="list-style-type: none"> - (U) (\$1.895) Continued development of composite components and improved ventilation methods/materials that reduce sailor workload for the existing Fleet. 		

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469
<p>2. (U) FY 2002 PLAN:</p> <p>(U) OPEN SYSTEMS ARCHITECTURE:</p> <p>- (U) (\$1.953) TOSA Business/Technical Architecture, Process and Assessments: Complete draft business architecture and business case for TOSA implementation. Complete draft economic and other assessments of TOSA implementation. Conduct projections of technology, operational and technical architectures, regulatory, market and cost drivers, benchmarking and market research to use in assessing PEO(S) systems' architecture and interface openness. Complete processes and metrics to assess/validate system architecture and interface openness for technology refresh and insertion.</p> <p>-(U) (\$2.467) TOSA Implementation: Transition TOSA architectures and interfaces with industry. Complete the development of the Open Sensor/Network and Open Material Condition Interface demonstrators and conduct industry and Navy outreach. Complete the assessment of offboard vehicles-Ship interfaces for development of Fleet-wide offboard vehicles interfaces. Complete the development of an Open C4I Zone Interface demonstrator and conduct industry outreach and testing. Support the implementation of open systems architecture interfaces for environmental systems.</p> <p>(U) FLEET-FOCUSED INITIATIVES:</p> <p>(U) FUEL CELL</p> <p>- (U) (\$0.670) Continue SSFC ship impact assessments and model analysis of molten carbonate reduced scale demonstrator and PEM integrated fuel processor.</p> <p>(U) SALVAGE AND UNDERWATER SHIP HUSBANDRY</p> <p>- (U) (\$0.267) Perform prototype assembly and testing for the Smart Tow Monitoring System. Continue development of materials for the improved Shaft Coating Systems. Acquire diagnostic hardware for evaluating Shaft Coating System performance.</p> <p>(U) TOC INITIATIVES</p> <p>-(U) (\$0.199) Continue development of improved fuel system training that reduce's sailor workload for the existing fleet.</p>		

R-1 SHOPPING LIST - Item No. 52-23 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 23 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469
<p>3. (U) FY 2003 PLAN:</p> <p>(U) OPEN SYSTEMS ARCHITECTURE:</p> <ul style="list-style-type: none">- (U) (\$1.126) TOSA Business/Technical Architecture, Process and Assessments: Complete business architecture and business case for TOSA implementation. Complete economic and other assessments of TOSA implementation for prioritized targets. Complete prioritized projections of technology, operational and technical architectures, regulatory, market and cost drivers, benchmarking and market research fo use in assessing PEO(S) systems' architecture and interface openness. Assess system architecture and interface openness for technology refresh and insertion.- (U) (\$1.806) TOSA Implementation: Transition TOSA architectures and interfaces with industry. Conduct risk reduction for the implementation of Open Sensor/Network and Open Material Condition Interfaces. Complete the development of open ship-offboard vehicle interfaces. Implement the Open C4I Zone architecture and appropriate interfaces. Continue the implementation of open systems architecture interfaces for environmental systems. Develop enabling technologies to further the exploitation of standard interfaces for total ship systems. <p>(U) FLEET-FOCUSED INITIATIVES:</p> <p>(U) FUEL CELL</p> <ul style="list-style-type: none">- (U) (\$0.926) Initiate lab eval of SSFC molten carbonate reduced scale demo and validate static and dynamic models. <p>(U) SALVAGE AND UNDERWATER SHIP HUSBANDRY</p> <ul style="list-style-type: none">- (U) (\$0.371) Complete preliminary testing of the Smart Tow System. Evaluate inspection/diagnostic techniques and document protocol for inspecting Shaft Coating Systems underwater. <p>(U) TOC INITIATIVES</p> <ul style="list-style-type: none">- (U) (\$0.371) Continue development of improved fuel system training that reduce's sailor workload for the existing fleet.		

R-1 SHOPPING LIST - Item No. 52-24 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 24 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469					
B. (U) OTHER PROGRAM FUNDING SUMMARY:										
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
DD (X) Total Ship Systems/Engineering/0604300N		286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.
C. (U) ACQUISITION STRATEGY:										

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, N/BA-4	Shipboard Sys Component Dev/0603513N	Open Systems Architecture (OSA)/32469	
D. (U) SCHEDULE PROFILE:			
PROGRAM MILESTONES	FY 2001	FY 2002	FY 2003
Survivability/Auxiliary Systems	1Q System/Subsystem Development	4Q SSFC Fuel Cell and Processor Assessments	4Q SSFC Fuel Cell Model Validations
Fuel Cell	4Q ASAP Crew Casualty/DC Model		
Salvage and Underwater Ship Husbandry	4Q SSFC Ship Impact Assessments		
TOC Initiatives			

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469	
PROGRAM MILESTONES	FY 2001	FY 2002	FY 2003
Open Systems Architerture (OSA)	2Q Complete TOSA process and strategy 2Q Complete engineering development of C4ISR Zone Open Foundations 2Q Concept for shipboard open sensor network interfaces 4Q TOSA business case and impact assessments 4Q Concept for open C4ISR Zone electric architecture and interfaces 4Q DD (X) Alliance Teams technology transfer and assessments	1Q Draft OSA Business Case templates and initial assessments 1Q Open Sensor/Network Interface demonstrator completed 2Q Open Material Condition Interface demonstrator completed 4Q Open Offboard Vehicles-Ship Interface standards developed 4Q Open C4I Zone Interface demonstrator 4Q DD (X) Industry Team partnering and assessments	1Q OSA Business Case completion and metrics development 3Q Open C4I Zone implementation 3Q Open Sensor/Network Interface risk reduction 3Q Open Material Condition Interfaces risk reduction 4Q DD (X) Industry Team interface development and assessments

R-1 SHOPPING LIST - lte 52-27 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 27 of 41)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE:					February 2002	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Open Systems Architecture (OSA)/32469								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract		
SURVIVABILITY														
Primary Hardware Development														
Product Development	Sec845/804	DD (X) Industry Teams	14.386	8.391	10/00					0.000	22.777			
	WR	NSWC CD Bethesda, MD	7.848	2.175	Various					0.000	10.023			
	Various	Other Gov't Activities	4.743	0.244	Various					0.000	4.987			
	Various	Other Contractors	2.635	0.100	Various					0.000	2.735			
Ancillary Hardware Development														
Systems Engineering														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Survivability			29.612	10.910		0.000		0.000		0.000	40.522			
Remarks: Funding for survivability efforts was reprogrammed to PE 0603513N, Project 32465 in FY 2002 and out.														
Open Systems Architecture (OSA)														
Engineering Dev, Demo & Eval	Sec845/804	DD (X) Industry Teams	7.111	5.439	10/00	0.000	N/A	0.000	N/A	0.000	12.550			
	CPIF	DD (X) Design Agent	0.000	0.000	N/A	0.200	3QFY02	0.200	1QFY03	CONT.	CONT.			
	Various	Other Gov't Activities	11.387	1.570	Various	2.482	Various	1.818	Various	CONT.	CONT.			
	Various	Other Contractors	3.041	0.350	Various	1.738	Various	0.914	Various	CONT.	CONT.			
Development Support Equipment														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Subtotal ATC			21.539	7.359		4.420		2.932		CONT.	CONT.			
Remarks: Funding for DD (X) Industry Teams has been reprogrammed to DD (X) Design (PE 0604300N, Project 32464) in FY 2002 and out.														

R-1 SHOPPING LIST - Item No. 52-28 of 52-41

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 28 of 41)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Shipboard Sys Comp Dev/0603513N			PROJECT NAME AND NUMBER Open Systems Architecture (OSA)/32469						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Fleet Focused Initiatives												
Contractor Engineering Support												
Gov't Eng Support	WR	NSWC CD Philadelphia, PA	0.743	0.944	Various	0.869	Various	1.297	Various	CONT.	CONT.	
	Various	Other Contractors	0.624	0.449	Various	0.267	Various	0.371	Various	CONT.	CONT.	
	Various	Other Govt Activities	12.640	1.355	Various	0.000	N/A	0.000	N/A	CONT.	CONT.	
Program Management Support												
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Auxiliary Systems			14.007	2.748		1.136		1.668		CONT.	CONT.	
Remarks: Funding for auxiliary system efforts was reprogrammed to PE 0603513N, Project 32465 in FY 2002 and out.												
Total Cost			65.158	21.017		5.556		4.600		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 52-29 of 52-41

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 29 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Shipboard Sys Component Dev/0603513N			Integrated Topside Design (ITD)/32470					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		15.775	(1) 5.348	4.224	3.886	3.795	2.969	0.987	CONT.	CONT.
RDT&E Articles Qty		0	0	0	0	0	0	0	CONT.	CONT.
<p>Note (1): (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed from this project to the DD (X) Design line (PE 0604300N, Project 32464) beginning in FY 2002.</p> <p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops and integrates the necessary technologies to achieve a total integrated topside design focused on DD (X) and future surface combatant ships. Technology areas including topside signature control, sensor and antenna integration, weapon system integration, HM&E integration, related decision-making tools, and composite materials will be addressed. Other stand alone technology programs will be integrated with this effort to assure total ship systems integration for future ship design efforts. Surface combatants will need an added (stealth) layer of defense to support hardkill and softkill systems in defeating future threats. Composite materials that provide improved corrosion control and enable reduced maintenance and reduced manning will also be considered. This project also develops improved equipments that are small but critical components of non-propulsion HM&E systems. 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. In FY 2002 and out, DD (X) design and systems integration elements of this project have been shifted to PE 0604300N, Project 32464.</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none">- (U) (\$3.090) Continued validation of composite material design procedures materials database. Continued development of Radar Cross Section (RCS), Infrared (IR), and Electronic Warfare (EW) prediction codes. Continued to validate and improve Electro Magnetic (EM) Engineering Tools.- (U) (\$10.238) Completed engineering efforts required for initial system design of DD (X) ITD. Began ITD system/subsystem design for DD (X).- (U) (\$0.947) Completed investigation of hydrogen fuel and other alternate shipboard power sources. Continued development of affordable HM&E machinery and architectures for existing and future fleet and create HM&E future machinery development roadmaps.- (U) (\$1.500) Complete system architecture assessments and conduct engineering assessments to address family of systems implementation alternatives for Naval Fires integration and inoperability warfighting requirements.										

R-1 SHOPPING LIST - Item No. 52-30 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 30 of 41)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Shipboard Sys Component Dev/0603513N			Integrated Topside Design (ITD)/32470					
<p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> -(U) (\$1.045) Continue development of RCS, IR, and EW prediction codes. -(U) (\$3.636) Continue to validate and improve EM Engineering Tools. Continue validation of composite material design procedures materials database. -(U) (\$0.667) Continue development of auxiliary machinery, alternative hydrogen fuel, fuel storage, and architectures to support fleet and Strategic Studies Groups 19 and 20 initiatives. <p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$0.670) Continue development and validation of RCS, IR, and EW prediction codes for surface ships. - (U) (\$0.955) Continue development of affordable, efficient HM&E machinery and architectures for existing and future fleet. - (U) (\$2.599) Continue development and validation and improve EM Engineering tools for surface ships. Develop and validate modeling tools to support assessment of survivability characteristics of composite topside structures. Continue development and validation of composite material design database. <p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p>										
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
DD (X) Total Ship Systems/Engineering/0604300N		286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.
<p>C. (U) ACQUISITION STRATEGY:</p>										

R-1 SHOPPING LIST - Item No. 52-31 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 31 of 41)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDTE, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Integrated Topside Design (ITD)/32470

D. (U) SCHEDULE PROFILE:

PROGRAM MILESTONES

FY 2001
2Q Hydrogen assessment report
4Q RCS/IR/EW Code Updates
4Q Composite Design Guide Updates
4Q HM&E future machinery roadmap

FY 2002
4Q-Continue Validation and Verification (V&V) of upgraded EM Engineering tools.
4Q-Continue upgrades and V&V of signature prediction tools.
4Q-Continue upgrades to topside composite survivability models and data base.

FY 03
4Q-Continue Validation and Verification (V&V) of upgraded EM Engineering tools.
4Q-Continue upgrades and V&V of signature prediction tools.
4Q-Continue upgrades to topside composite survivability models and data base.

R-1 SHOPPING LIST - Item No. 52-32 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 32 of 41)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Integrated Topside Design/32470						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Sec845/804	DD (X) Industry Teams	14.318	10.238	10/00	0.000	N/A	0.000	N/A	0.000	24.556	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			14.318	10.238		0.000		0.000		0.000	24.556	
Remarks: Funding for DD 21 Industry Teams has been reprogrammed to DD 21 Design (PE 0604300N, Project 32464) in FY 2002 and out.												
Engineering Support	Various	Gov't Activities	14.005	3.618	Various	3.448	Various	2.627	Various	CONT.	CONT.	
	Various	Other Contractors	2.430	0.505	11/00	0.200	Various	0.200	12/02	CONT.	CONT.	
	WR	NSWC CD Bethesda	0.000	1.414	10/00	1.700	02/02	1.397	12/02	CONT.	CONT.	
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			16.435	5.537		5.348		4.224		CONT.	CONT.	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Integrated Topside Design/32470						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Program Management Support												
Miscellaneous												
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.000		0.000		0.000		CONT.	CONT.	
Remarks:												
Total Cost			30.753	15.775		5.348		4.224		CONT.	CONT.	
Remarks:												

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4		Shipboard Sys Component Dev/0603513N			Integrated Power Systems (IPS)/32471					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		84.874	105.577	99.765	79.889	65.902	10.085	9.909	CONT.	CONT.
RDT&E Articles Qty		0	0	0	0	0	0	0	CONT.	CONT.
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, and mission load interfaces to the electric power system. IPS supports multiple ship class applications for future surface ships, with DD (X) being the primary ship application target. On 6 January 2000, SECNAV announced Navy intent that DD (X) be an electric drive ship with integrated power architecture. The goals of the IPS are to reduce acquisition and operating costs of naval ships and increase military effectiveness. These goals are to be accomplished by leveraging 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. The efforts in this project are divided into three major areas as follows:										

R-1 SHOPPING LIST - Item No. 52-35 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 35 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Integrated Power Systems (IPS)/32471
<p>- (U) System development: consists of the efforts necessary to develop and demonstrate broadly applicable warfighting improvements and cost reductions as well as related efforts for ship platform and mission load interface applications.</p> <p>- (U) Platform Specific Development: includes all efforts to design, develop, qualify, and test integrated power system equipment for ship specific application including DD (X). This includes Permanent Magnet (PM) motor and motor drive technologies</p> <p>- (U) RV Triton At Sea Testing: At Sea Testing of IPS subsystems and components will be conducted on the RV Triton Trimaran Demonstrator developed and built under a US/UK cooperative Memorandum of Understanding (MOU) signed 3 September 1997. The RV Triton was launched on 6 May 2000 under the contract for construction awarded in July 1998. The RV Triton is constructed with a commercial electric drive system as well as provisions for fitting and testing of IPS components. Initial testing on the RV Triton is non-IPS and will focus on Naval Architectural and sea-keeping aspects of the trimaran hull form. An opportunity for the US to backfit IPS components and conduct follow-on at sea testing is built into the MOU. The US financial contribution to the MOU is also funded from this project. The efforts in this project support the procurement, installation, and at sea testing of IPS components on the RV Triton.</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <p>- (U) (\$29.634) Systems Development: Continued IPS design, development, and integration including performance analysis and testing, modeling and simulation, life cycle cost analysis, producibility studies, manning studies, module development, ship integration, architecture design and related efforts. Conducted AD Phase III testing at NSWCCD, Philadelphia PA. Demonstrated the total system operation through various modes and the survivability and zonal isolation/fight through features of the advanced development system. Demonstrated automated system reconfiguration and start up. Continued IFTP and solid state power conversion efforts to mitigate potential risks associated with a fielded IPS system. Efforts included completing detailed design and risk reduction and begin fabrication of hardware required to populate IPS baseline configuration fight through testing. Conducted initial combat systems/survivability demonstration to show improved performance and potential to reduce combat system costs. Tested and demonstrated VSD motor controller for auxiliary applications. Continued IPS configuration development in support of JCC (X) Design Ship Study Group Phase II studies and AoA. Continued support for LH (X) studies. Initiated development/modification of IPS ship configuration documentation including CONOPS, System Level Description/Requirements, and module performance specifications as necessary to support power system requirements for JCC (X). Continued development of 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.</p>		

R-1 SHOPPING LIST - Item No. 52-36 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 36 of 41)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N	PROJECT NAME AND NUMBER Integrated Power Systems (IPS)/32471
<p>- (U) (\$51.690) Platform Specific Development: Completed preliminary design of competing PM motors and motor drives and incorporate preferred motor options into DD (X) IPS system designs. Began detailed design of PM motor and PM motor risk reduction. Conducted preliminary ship system design of DD (X) IPS system. DD (X) industry teams finalized proposed configurations. Continued DD (X) IPS system risk reduction.</p> <p>- (U) (\$3.550) At Sea Testing: Performed preliminary design of RV Triton IPS components. Began detailed design of hardware required for at sea testing. Continued development of IPS control system for use during at-sea testing.</p> <p>2. (U) FY 2002 PLAN:</p> <p>- (U) (\$23.434) Systems Development: Continue IPS design, development, and integration including performance analysis and testing, modeling and simulation, life cycle cost analysis, producibility studies, manning studies, module development, ship integration, architecture design and related efforts. Continue to demonstrate automated system reconfiguration and start-up. Continue IFTP efforts to mitigate potential risks associated with a fielded IPS system. Efforts include continuing hardware fabrication and conducting factory acceptance testing of hardware required to populate IPS baseline configuration for fight through testing. Begin modification of test site design for IPS integrated fight through power testing at NSWCCD, Philadelphia PA. Evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include technologies such as fuel cells and power electronics. Conduct combat systems/survivability demonstration to show improved performance and potential to reduce combat system costs. Continue IPS configuration development in support of JCC (X) and LH (X) ship programs. Continue to develop/modify IPS ship configuration documentation including CONOPS, System Level Description/Requirements, and module performance specifications as necessary to support power system requirements for JCC (X) and LH (X) and MPF future. Continue development of 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.</p> <p>- (U) (\$79.293) Platform Specific Development: Begin detailed ship system design of DD (X) IPS system. Complete detailed design of PM motor. Continue PM motor and DD (X) IPS system risk reduction. Begin fabrication of full scale PM motor. Order Long Lead Material (LLM) and other material for test program. Determine representative test hardware configuration and begin modification of test site design for IPS qualification and testing at NSWCCD, Philadelphia PA. In support of DD (X) IPS system risk reduction, conduct conceptual designs of an at sea test vehicle and representative hardware configurations and perform total ship system engineering studies, models and simulations, and cost analyses/studies.</p> <p>- (U) (\$2.850) R/V Triton At Sea Testing: Complete detailed design and begin procurement of hardware required for at sea testing. Continue detailed development and design of the RV Triton IPS configuration for at sea testing. Continue development of IPS control system modifications for use during at-sea testing.</p>		

R-1 SHOPPING LIST - Item No. 52-37 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 37 of 41)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002																							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Shipboard Sys Component Dev/0603513N			PROJECT NAME AND NUMBER Integrated Power Systems (IPS)/32471																								
<p>3. (U) FY 2003 PLAN:</p> <p>- (U) (\$4.818) Systems Development: Continue IPS design, development, and integration including performance analysis and testing, modeling and simulation, life cycle cost analysis, producibility studies, manning studies, module development, ship integration, architecture design and related efforts. Continue IFTP efforts to mitigate potential risks associated with a fielded IPS system. Efforts include completing hardware fabrication and factory acceptance testing, and taking delivery of hardware required to populate IPS baseline configuration for fight through testing. Complete modification of test site design for IPS integrated fight through power and begin testing at NSWCCD, Philadelphia PA. Continue to evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include technologies such as fuel cells and power electronics. Continue IPS configuration development in support of LH(X) and MPF Future ship programs. Continue to develop/modify IPS ship configuration documentation including CONOPS, System Level Description/Requirements, and module performance specifications as necessary to support power system requirements for LH(X) and MPF Future. Continue development of 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.</p> <p>- (U) (\$82.000) Platform Specific Development: Continue detailed ship system design of DD (X) IPS system. Continue PM motor and DD (X) IPS system risk reduction. Take delivery of full scale PM motor. Continue ordering other material for test. Determine test hardware configuration and complete modification of test site design for IPS qualification and testing at NSWCCD, Philadelphia PA. In support of DD (X) IPS system risk reduction, conduct preliminary and detailed design of at sea test vehicle and hardware configuration.</p> <p>- (U) (\$12.947) RV Triton At Sea Testing: Continue procurement of hardware required for at sea testing. Complete detailed development and design of the RV Triton IPS configuration for at sea testing and begin risk reduction efforts and ship modifications. Continue development of IPS control system modifications for use during at-sea testing.</p> <p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="text-align: left;">COST (\$ in Millions)</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>FY 2004</th> <th>FY 2005</th> <th>FY 2006</th> <th>FY 2007</th> <th>To Complete</th> <th>Total Cost</th> </tr> <tr> <td>DD (X) Total Ship Systems/Engineering/0604300N</td> <td>286.444</td> <td>235.235</td> <td>717.397</td> <td>923.649</td> <td>1354.041</td> <td>1705.084</td> <td>1311.339</td> <td>CONT.</td> <td>CONT.</td> </tr> </table> <p>C. (U) ACQUISITION STRATEGY: (U) IPS is a candidate system for DD(X) and all other future surface ships.</p>										COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost	DD (X) Total Ship Systems/Engineering/0604300N	286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost																				
DD (X) Total Ship Systems/Engineering/0604300N	286.444	235.235	717.397	923.649	1354.041	1705.084	1311.339	CONT.	CONT.																				

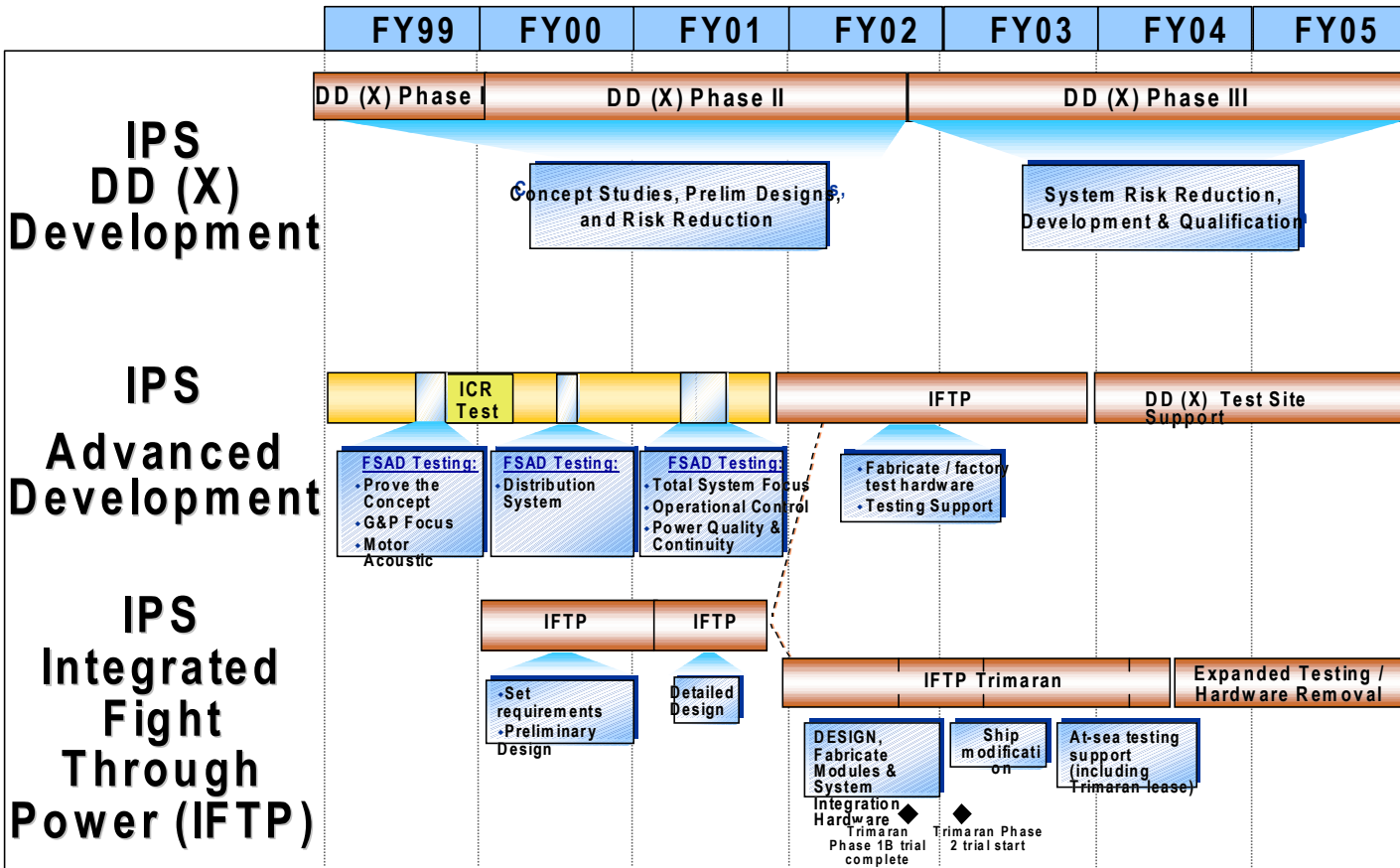
R-1 SHOPPING LIST - Item No. 52-38 of 52-41

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 38 of 41)

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification			DATE:	February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER		
RDT&E, N/BA-4	Shipboard Sys Component Dev/0603513N	Integrated Power Systems (IPS)/32471		

D. (U) SCHEDULE PROFILE:



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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Integrated Power System/32471						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed M Syracuse, NY	22.072	2.500	02/01	0.000	N/A	0.000	N/A	0.000	24.572	
	Sec845/804	DD (X) Industry Teams	14.971	51.690	07/01	0.000	Various	0.000	N/A	0.000	66.661	
	CPIF	DD (X) Design Agent	0.000	0.000	N/A	72.500	3QFY02	82.000	1QFY03	CONT.	CONT.	
	Sec845/804	IFTP Teams	3.448	18.804	12/00	21.564	02/02	15.065	10/02	CONT.	CONT.	
	US/UK MOU	DERA, UK	0.000	1.350	06/01	0.000	N/A	0.000	N/A	CONT.	CONT.	
	WR	NSWCCD Philadelphia, PA	11.799	6.115	12/00	4.827	02/02	1.050	10/02	CONT.	CONT.	
	WR	NSWCCD Dahlgren, Va.	0.000	0.000	N/A	2.806	02/02	0.000	N/A	CONT.	CONT.	
	Various	Other Contractors	5.723	1.565	12/00	2.212	03/02	0.450	12/02	CONT.	CONT.	
Various	Other Govt Activities	1.025	0.302	12/00	0.568	02/02	0.100	10/02	CONT.	CONT.		
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Subtotal Product Development			59.038	82.326		104.477		98.665		CONT.	CONT.	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 52-40 of 52-41

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 40 of 41)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Shipboard Sys Comp Dev/0603513N			Integrated Power System/32471						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC CD Philadelphia, PA	13.138	2.438	12/00	1.000	02/02	1.000	10/02	CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			13.138	2.438		1.000		1.000		0.000	CONT.	
Remarks:												
Contractor Engineering Support												
Program Management Support												
Miscellaneous												
Travel	Various	Various	0.314	0.110	12/00	0.100	04/02	0.100	10/02	CONT.	CONT.	
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.314	0.110		0.100		0.100		CONT.	CONT.	
Remarks:												
Total Cost			72.490	84.874		105.577		99.765		CONT.	CONT.	
Remarks:												

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EXHIBIT R-2, RDT&E Budget Item Justification								DATE: January 2002		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE Radiological Controls/0603542N					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		0.566	1.047	1.078	1.158	0.999	1.011	1.025	CONT.	CONT.
RADIAC Development/S1830		0.566	1.047	1.078	1.158	0.999	1.011	1.025	CONT.	CONT.
Quantity of RDT&E Articles										

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. Project S1830 coordinates all Navy efforts for the development of nuclear radiation detection devices to replace obsolete equipment.

Budget Item Justification:

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

Naval Dosimetry System (NDS). A Personnel Dosimetry System is being explored to support routine operations and maintenance of Navy systems involving occupational radiation exposure on nuclear ships, nuclear maintenance facilities, hospitals, weapons and in other radiological environments. A new system is needed to replace the CP 1112 and DT-526 system, which is approaching the end of its useful life due to increasing failure rates and parts non-availability. Despite ongoing restoration efforts to ensure asset availability, current projections indicate that the equipment will become unsupported by year 2004.

A Casualty Dosimetry System is needed to support contingencies after an act of terrorism or war involving nuclear materials in order to enable continuous warfighting capability. The current Casualty Dosimeter System consisting of the CP-95 reader with DT-60 dosimeter is at the end of its useful life. The readers are no longer logistically supported and only cannibalization is available to restore the very limited supply of non-operational units.

R-1 SHOPPING LIST - Item No. 55

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 6)

UNCLASSIFIED

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	
		January 2002	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		Radiological Controls/0603542N	
(U) Program Accomplishments and Plans.			
FY 2001 ACCOMPLISHMENTS:			
<div>- (U) (\$.249) Complete the development of the Navy Dosimetry System.</div> <div>- (U) (\$.253) Complete the extendable probe and frisker station and begin the development of neutron probe.</div> <div>- (U) (\$.064) Resume development of the casualty dosimeter.</div>			
FY 2002 PLAN:			
<div>- (U) (\$.544) Continue development of the MFR neutron probe and begin development of the radiography probe.</div> <div>- (U) (\$.257) Continue development of the casualty dosimeter.</div> <div>- (U) (\$.246) Begin enhancements for the Navy Dosimetry System.</div>			
FY 2003 PLAN:			
<div>- (U) (\$.579) Continue development of the MFR neutron probe and continue development of the radiography probe.</div> <div>- (U) (\$.250) Continue development of the casualty dosimeter.</div> <div>- (U) (\$.249) Continue enhancements for the Navy Dosimetry System.</div>			
B. Program Change Summary.			
	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	0.567	1.056	
(U) Appropriated Value:	0.572	1.056	
(U) Adjustments to FY 2001/2002			
Appropriated Value/FY 2002			
President's Budget:	-0.001	-0.009	-0.056
(U) FY 2003 Pres Budget Submit:	0.566	1.047	-0.056

R-1 SHOPPING LIST - Item No. 55

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 6)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

January 2002

APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4

R-1 ITEM NOMENCLATURE

Radiological Controls/0603542N

B. Program Change Summary, cont.

Funding: The FY 01 net decrease of \$.001 is for a minor pricing adjustment. The FY 02 net decrease of \$.009M is due to minor pricing adjustments. The FY 03 net decrease of \$.056M is due to PBD adjustments (-\$.051M) and minor pricing adjustments (-\$.005M).

Schedule: Not applicable.

Technical: Not applicable.

C. Other Program Funding Summary.

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete
OPN BLI: 292000 RADIAC	7.879	7.806	8.015	8.797	8.666	8.821	9.008	CONT.

D. Acquisition Strategy.

Development efforts are being focused on evaluation, modification (as required to meet operational requirements), and adaptation of Commercial Off-The-Shelf 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.

R-1 SHOPPING LIST - Item No. 55

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 3 of 6)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification		DATE:
		January 2002
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	Radiological Controls/0603542N	
<p>E. Schedule Profile.</p> <p>Naval Dosimetry System:</p> <ul style="list-style-type: none">Delivery of Advance Development Systems – 2/00Completion of Testing – 6/00Milestone III Decision – 6/03Initial Operational Capability – 9/04 <p>MFR Enhancements/Probe Development:</p> <ul style="list-style-type: none">Delivery of Prototypes for Extendable Probe (EP) – 1/99Completion of Testing for EP – 4/99Delivery of Revised Prototype - 3/01Completion of Testing of Revised Prototype- 7/01Production Contract Awarded for EP – 8/02Delivery of Prototypes for Directional Gamma Probe (DGP) – 11/99Completion of Testing for DGP – 4/00Production Contract Awarded for DGP – 6/01Award Contract for Frisker Station Development - 4/00Delivery of Frisker Station – 12/00Completion of Testing of Frisker Station – 5/01Production Contract Awarded for Frisker Station - 8/02 <p>Casualty Dosimeter</p> <ul style="list-style-type: none">Complete SBIR Phase II Testing – 1/99Complete Testing of revised Casualty Dosimeter - 3/02		

R-1 SHOPPING LIST - Item No. 55

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 4 of 6)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: January 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Radiological Control/0603542N			RADIAC Development Project - S1830						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Dev Dosimetry	C/FP	Various (See below)	8.697	0.000		0.000		0.000		CONT.	CONT.	
Primary Hardware Dev Miscellaneous	C/FP	Various	6.092	0.000		0.333	03/02	0.309	03/03	CONT.	CONT.	
Ancillary Hardware Development											0.000	
Systems Engineering	WR		0.380	0.370	10/00	0.352	10/01	0.381	10/02		1.483	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			15.169	0.370		0.685		0.690		CONT.	CONT.	
Remarks: Prior to 8/96 - International Sensor Technology, Pullman, Washington 12/96 - 7/98 - Keithley Radiation Measurements, Cleveland, Ohio Follow-on contract will be competed												
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	
Remarks: Not applicable												

R-1 SHOPPING LIST - Item No. 55

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 6)

UNCLASSIFIED

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UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)								January 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Radiological Control/0603542N			RADIAC Development Project/S1830						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various	3.518	0.186	10/00	0.352	10/01	0.378	10/02	CONT.	CONT.	
Operational Test & Evaluation			0.329								0.329	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			3.847	0.186		0.352		0.378		CONT.	CONT.	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support	WR	Various	5.045							CONT.	CONT.	
Program Management Support	WR	Various	5.046							CONT.	CONT.	
Travel			0.020	0.010	10/00	0.010	10/01	0.010	10/02	CONT.	CONT.	
Labor (Research Personnel)			0.788								0.788	
Overhead											0.000	
Subtotal Management			10.899	0.010		0.010		0.010		CONT.	CONT.	
Remarks:												
Total Cost			29.915	0.566		1.047		1.078		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 55

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 6)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA4				R-1 ITEM NOMENCLATURE PE 0603553N Surface ASW/S1704 ASW Adv Dev					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	7.203	3.691	3.219	3.302	3.320	3.368	3.429	Continuous	Continuous
ASW Advanced Development/V1704	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuous	Continuous
ASW Advanced Development/S1704	7.203	3.691	3.219	3.302	3.320	3.368	3.429	Continuous	Continuous
Quantity of RDT&E Articles									

A. Mission Description and Budget Item Justification: The ASW Advanced Development project provides advanced development demonstration and validation of technology for potential surface sonar and combat system applications. Efforts focus on resolution of technical issues associated with providing capability against the Year 2005 and beyond threat with emphasis on shallow water/littoral area USW and on demonstration and validation of Undersea Warfare (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, multi-static sonar, and multi-sensor data fusion including multi-platform data fusion and netcentric undersea warfare concepts. This Program Element, 0603553N, has been designated to support Multi-Static Active ASW (MAASW) efforts associated with the Distant Thunder program and other emerging multi-static technologies. The MAASW project conducts advanced development and testing of active multistatic acoustic concepts. The concept development is directed at providing surface ships combat groups with the capability of detection, classification, and localization of quiet threat submarines in difficult acoustic environments associated with Littoral waters. The project concentrates on the development of acoustic processor algorithms, alternative cost-effective active sources and information sharing technologies to develop a coordinated multi-static acoustic picture employing distributed sensors and active sources.

Program Plans and Accomplishments:

1. (U) FY 2001 Accomplishments:

(\$2.963) Multistatic Active ASW: Improved acoustic processing and communication schemes through coordination with Office of Naval Research and use of test data. Participated in SHAREM 136 to collect multi-static processors/communication systems data and environmental acoustic data and analyze/evaluate system performance and alternative acoustic sources in Littoral ASW environments. Began Advanced Processing Build (APB) process in preparation for integration of coherent waveform processing algorithms. Completed development of Impulsive Source Concept of Operations and transitioned documentation to the Surface Warfare Development Group (SWDG). Installed Advanced Development Model (ADM) R&D Proof-of-concept installation on USS Cushing (DD985) COMDESRON Fifteen test ships.

(\$4.240) Advanced Undersea Warfare Concept (AUSWC): Field and demonstrated a network-centric Undersea Warfare (USW) theater combat system to support air, surface, and sub-surface platforms of the Carl Vinson Battlegroup. Supported second installation (Build 2.0) plan for Carl Vinson Battlegroup for selected battlegroup platforms.

2. FY 2002 Plan:

(\$3.691) Multistatic Active ASW: Upgrade air deployed advanced development multistatic processing system through coordination with PMA-264. Integrate Distant Thunder multi-static active impulsive signal processing algorithms through the Advanced Processing Build (APB) process into the APB-02 multistatic processing string. APB-02 will provide impulsive and coherent multistatic active acoustic processing capability. Improve support and interface to shipboard Combat Information Center (CIC) watch standers. Address coherent waveform capabilities in concept of operations and tactical documentation. Finalize documentation and initiate preparation for product(s) transition to AN/SQQ-89(V)15.

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY	R-1 ITEM NOMENCLATURE PE 0603553N Surface ASW/S1704 ASW Adv Dev																					
<p>3. FY 2003 Plan: (\$3.219) Multistatic Active ASW: Complete remaining integration of Distant Thunder algorithms and interfaces to the Advanced Processing Build (APB) Process (APB-02). Demonstrate and evaluate, through SHAREM and FBE exercise participation, APB-02 multistatic active capabilities and existing multistatic active ASW tactical guidance. Complete impulsive Distant Thunder algorithm documentation in preparation for transition to the AN/SQQ-89 A(V)15. Determine, through coordination with OPNAV N763, OMDEVENTHFLT, and PMS-400, desirability to maintain and support COMDESRON Fifteen test ship R&D proof-of-concept installations beyond FY03.</p>																						
<p>B. Program Change Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">FY 2001</th> <th style="text-align: center;">FY 2002</th> <th style="text-align: center;">FY 2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: center;">6.690</td> <td style="text-align: center;">3.724</td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: center;">6.752</td> <td style="text-align: center;">3.724</td> <td></td> </tr> <tr> <td>(U) Adjustments to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:</td> <td style="text-align: center;">0.451</td> <td style="text-align: center;">-0.033</td> <td></td> </tr> <tr> <td>(U) FY 2003 Pres Budget Submit:</td> <td style="text-align: center;">7.203</td> <td style="text-align: center;">3.691</td> <td style="text-align: center;">3.219</td> </tr> </tbody> </table> <p>(U) Change Summary Explanation:</p> <p>(U) FY2001: Increase of (+.617) is a result of BTR adjustments, (-.087) for SBIR, and (-.079) for minor adjustments.</p> <p>(U) FY 2002 net decrease of (-0.033) for Section 8123 Management Reform Costs.</p> <p>Schedule: N/A</p> <p>Technical: N/A</p> <p>C. Other Program Funding Summary: N/A</p> <p>Related RDT&E:</p> <p>PE 0205620N (Surface ASW Combat Systems Integration) PE 0603504N (Advanced Submarine Combat Systems Development) PE 0603513N (DD-21 Associated System Development) PE 0603561N (Advanced Submarine System Development) PE 0603747N (Undersea Warfare Advanced Technology)</p> <p>D. Acquisition Strategy: Plan to continue competitively awarded contract(s).</p> <p>E. Schedule Profile: See attached Schedule.</p>				FY 2001	FY 2002	FY 2003	(U) FY 2002 President's Budget:	6.690	3.724		(U) Appropriated Value:	6.752	3.724		(U) Adjustments to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:	0.451	-0.033		(U) FY 2003 Pres Budget Submit:	7.203	3.691	3.219
	FY 2001	FY 2002	FY 2003																			
(U) FY 2002 President's Budget:	6.690	3.724																				
(U) Appropriated Value:	6.752	3.724																				
(U) Adjustments to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:	0.451	-0.033																				
(U) FY 2003 Pres Budget Submit:	7.203	3.691	3.219																			

R-1 SHOPPING LIST - Item No. 56 - 2 of 56 - 5

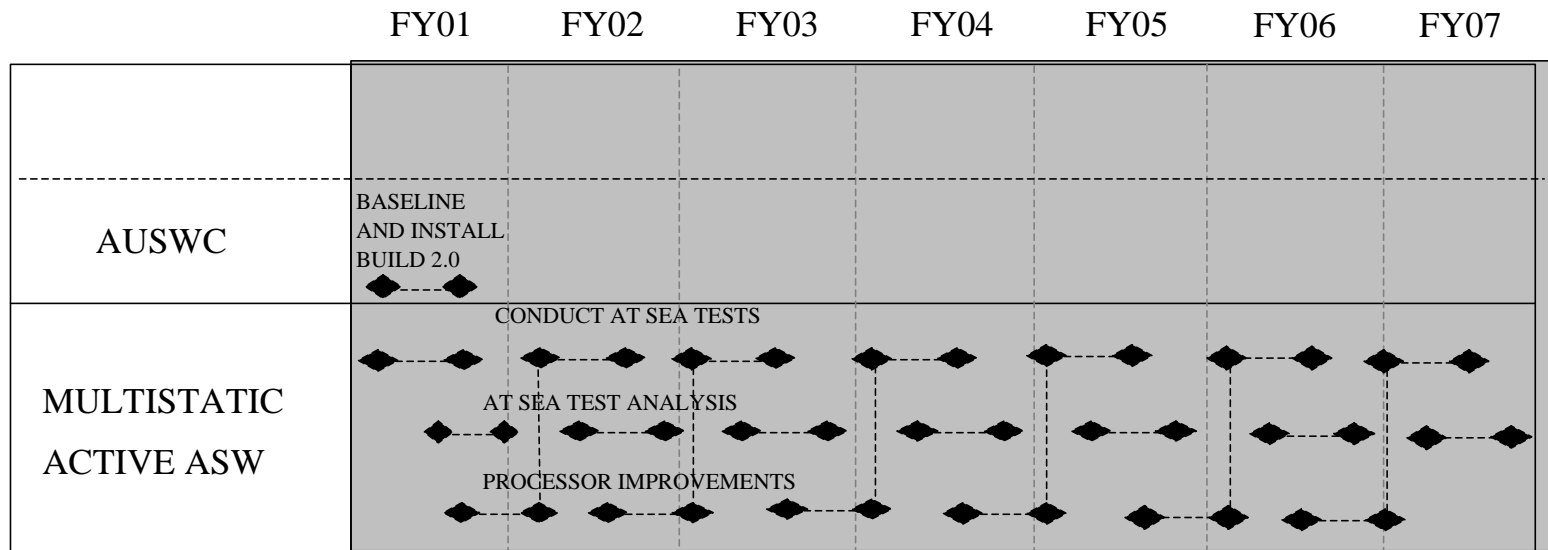
Exhibit R-2, RDT&E Budget Item Justification
 (Exhibit R-2, page 2 of 5)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N				PROJECT NAME AND NUMBER ASW Advanced Development, S1704					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	7.203	3.691	3.219	3.302	3.320	3.368	3.429		
RDT&E Articles Qty									

SURFACE ASW ADVANCED DEVELOPMENT



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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER						
RDT&E, N			Surface ASW/ PE 0603553N			ASW Advanced Development/S1704						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Multistatic Sonar Development	WR	NUWC/Npt	1.098	1.160	04/01	1.100	12/01	0.890	12/02	Continuous	Continuous	
Multistatic Sonar Development	WR	BATH MIN	0.010	0.011	11/00							
Multistatic Sonar Development	WR	PASCAGOULA MS	0.010	0.007	01/01							
Multistatic Sonar Development	WR	NAWC/KEY WEST	0.010									
Multistatic Sonar Development	WR	NAWC/Pax River	0.363	0.250	02/01	0.600	12/01	0.300	12/02	Continuous	Continuous	
Multistatic Sonar Development	CPFF	BBN	1.037	0.930	10/00	0.965	03/02	1.089	12/02	Continuous	Continuous	
Multistatic Sonar Development	CPFF	APL/JHU	0.110	0.140	02/01	0.100	01/02	0.100	12/02	Continuous	Continuous	
Multistatic Sonar Development	RCP/WR	NRL										
Multistatic Sonar Development	WR	NUWC/Keyport										
Multistatic Sonar Development	WR	NSWC/DD										
Multistatic Sonar Development	RCP	FLT. INDUR. SUP. CTR	0.010									
Multistatic Sonar Development	RCP	ONR	0.127	0.295	03/01	0.050				Continuous	Continuous	
Program Management Support	Various	Various				0.326		0.290				
Subtotal Product Development			2.775	2.793		3.141		2.669		0.000	11.378	
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 56 - 4 of 56 - 5

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 4 of 5)

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N			PROGRAM ELEMENT NAME AND NUMBER Surface ASW/PE 0603553N			PROJECT NAME AND NUMBER ASW Advanced Development/S1704						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost (K\$)	FY 01 Award Date	FY 02 Cost (K\$)	FY 02 Award Date	FY 03 Cost (K\$)	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC/Npt	1.004	0.872	12/00	0.400	11/01	0.411	11/02	Continuous	Continuous	
Developmental Test & Evaluation	WR	NAWC/Pax River	0.165	0.751	12/00					Continuous	Continuous	
Developmental Test & Evaluation	CPFF	BBN	0.000			0.100	11/01	0.100	11/02	Continuous	Continuous	
Developmental Test & Evaluation	WR	SUPSHIP BATH MIN.	0.033							Continuous	Continuous	
Developmental Test & Evaluation	WR	NUWC/Keyport	0.443	0.490	12/00					Continuous	Continuous	
Developmental Test & Evaluation	WR	NSWC/Carderock, MD	0.308	0.387	12/00					Continuous	Continuous	
Developmental Test & Evaluation	WR	NSWC/Dahlgren, VA	0.040		12/00					Continuous	Continuous	
Developmental Test & Evaluation	CPFF	APL/JHU, MD	0.626	0.910	03/01					Continuous	Continuous	
Developmental Test & Evaluation	CPFF	Progeny, Inc.	0.500	0.717	03/01					Continuous	Continuous	
Developmental Test & Evaluation	CPFF	IPD	0.055									
Developmental Test & Evaluation	MIPR	U.S. ARMY/MITRE	0.000									
Developmental Test & Evaluation	WR	SPAWAR Systems Center	0.435	0.123	12/00					Continuous	Continuous	
Subtotal T&E			3.609	4.250		0.500		0.511		Continuous	Continuous	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	CPFF	Stanley Assoc.	0.319	0.140	01/01	0.050	01/02	0.039	01/03	Continuous	Continuous	
Travel			0.020	0.020						Continuous	Continuous	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.339	0.160		0.050		0.039		Continuous	Continuous	
Remarks:												
Total Cost			6.723	7.203		3.691		3.219		Continuous	Continuous	
Remarks:												

R-1 SHOPPING LIST - Item No. 56 - 5 of 56 - 5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 5)

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: FEBRUARY 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE SSGN 0603559N					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		35.798	74.337	82.527	44.773	19.857	11.894	0.000	0.000	269.186
SSGN Trident Conversion/F2413		32.798	29.735	82.527	44.773	19.857	11.894	0.000	0.000	221.584
SSGN Trident Conversion/F2859		3.000	44.602							47.602
Quantity of RDT&E Articles										0.000
A. MISSION: Covert striking power against targets ashore; the capability to establish covertly an expeditionary force on land. Working both independently and in consort 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.										
(U) Program Accomplishments and Plans:										
(U) FY 2001 Accomplishments:										
2. (U) (\$14.805) Conducted preliminary design activities for risk mitigation, alternative selection, and conversion planning.										
(U) (\$14.428) Commenced Attack Weapons Systems preliminary design and risk mitigation activities which included: Missile Tube and Launcher/Canister design, test plan development, handling equipment development, test program fabrication, hardware and software design for the Attack Weapons Systems Fire Control System.										
(U) (\$6.565) Commenced engineering studies and development efforts for ship control, safety, hydrodynamics, test and evaluation, and required technical and milestone documentation.										

R-1 SHOPPING LIST - Item No. 57-1 of 57-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 7)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE SSGN 0603559N	
<p>3. (U) FY 2002 Plan:</p> <p>(U) (\$14.0) Conduct component and sub-system research and development activities: ship control algorithm development, Electro-magnetic actuator (EMA) valve development, and Weapons Support Systems Land Based Evaluation Facility (WSSLBEF) modifications to support development testing.</p> <p>(U) (\$38.197) Conduct underwater missile launch and Multiple-All-Up Round Canister (MAC) risk reduction demonstration/validation preparations including computer modeling and validation.</p> <p>(U) (\$12.103) 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.</p> <p>(U) (\$10.037) Non-propulsion electronics system (NPES) development and non-recurring system development including Universal Modular Mast (UMM), Data Processing System (DPS), Common Submarine Radio Room, and Tactical Integrated Digital System (TIDS).</p> <p>4. (U) FY 2003 Plan:</p> <p>(U) (\$26.547) Conduct component and sub-system research and development activities, ship control algorithm development, Electro-magnetic actuator (EMA) valve development, and Weapons Support Systems Land Based Evaluation Facility (WSSLBEF) modifications to support development testing.</p> <p>(U) (\$41.397) Complete underwater missile launch and Multiple-All-Up Round Canister (MAC) risk reduction including computer modeling and demonstration/validation preparations. Commence Multiple All Up Round Canister system development and demonstration (SDD).</p> <p>(U) (\$11.428) 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.</p> <p>(U) (\$3.155) Non-propulsion electronics system (NPES) development and non-recurring system development including Universal Modular Mast (UMM), Data Processing System (DPS), Common Submarine Radio Room, and Tactical Integrated Digital System (TIDS).</p>		

R-1 SHOPPING LIST - Item No. 57-2 of 57-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 7)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2002																				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE SSGN 0603559N																					
<p>B. (U) Program Change Summary:</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"></th> <th style="text-align: center;">FY 2001</th> <th style="text-align: center;">FY 2002</th> <th style="text-align: center;">FY2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: right;">37.416</td> <td style="text-align: right;">30.000</td> <td style="text-align: right;">83.000</td> </tr> <tr> <td>Appropriated Value:</td> <td style="text-align: right;">37.762</td> <td style="text-align: right;">75.000</td> <td></td> </tr> <tr> <td>Adjustments to FY 2001/2002 Appropriated Value/ FY 2002 President's Budget:</td> <td style="text-align: right;">-1.964</td> <td style="text-align: right;">-0.663</td> <td style="text-align: right;">-0.473</td> </tr> <tr> <td>FY 2003 President's Budget Submit:</td> <td style="text-align: right;">35.798</td> <td style="text-align: right;">74.337</td> <td style="text-align: right;">82.527</td> </tr> </tbody> </table> <p>(U) Change Summary Explanation:</p> <p>FY 2001 (U) Adjustments Project F2413: Funding change is attributed to (-\$.855) SBIR reduction; (-\$.676) ASN/RDA BTR; (-\$.087) other adjustments, .7% Prorata (-\$.264), Government Wide Rescission (-\$.82).</p> <p>FY 2002 (U) Adjustments Project F2413: Funding change is attributed to -\$.265 management reform initiative reduction. (U) Adjustments Project F2859: Funding change is attributed to a Congressional plus-up of \$45M to accelerate design effort and begin conversion of four TRIDENT SSBN submarines; -\$.398 management reform initiative reduction</p> <p>FY2003 (U) Adjustments to Project F2413: Funding decrease (-\$.473) Nonpay Inflation</p> <p>(U) Schedule: Convert four TRIDENT SSBN submarines to SSGN submarines</p> <p>(U) Technical Change: Not Applicable.</p>				FY 2001	FY 2002	FY2003	(U) FY 2002 President's Budget:	37.416	30.000	83.000	Appropriated Value:	37.762	75.000		Adjustments to FY 2001/2002 Appropriated Value/ FY 2002 President's Budget:	-1.964	-0.663	-0.473	FY 2003 President's Budget Submit:	35.798	74.337	82.527
	FY 2001	FY 2002	FY2003																			
(U) FY 2002 President's Budget:	37.416	30.000	83.000																			
Appropriated Value:	37.762	75.000																				
Adjustments to FY 2001/2002 Appropriated Value/ FY 2002 President's Budget:	-1.964	-0.663	-0.473																			
FY 2003 President's Budget Submit:	35.798	74.337	82.527																			

R-1 SHOPPING LIST - Item No. 57-3 of 57-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 3 of 7)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: FEBRUARY 2002			
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					SSGN 0603559N					
C. (U) Other Program Funding Summary:										
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
(U) SCN	0.000	0.000	355.440	825.305	936.005	504.694	170.341	0.000	0	2,791.785
(U) Related RDT&E:										
(U) PE 0603563N Ship Concept Advanced Design										
D. (U) Acquisition Strategy										
(U) To refuel, overhaul, convert and deliver four 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 will proceed directly to Milestone C (summer FY 2002).										
E. (U) Schedule Profile:										
(U) See attached Planning Schedule.										

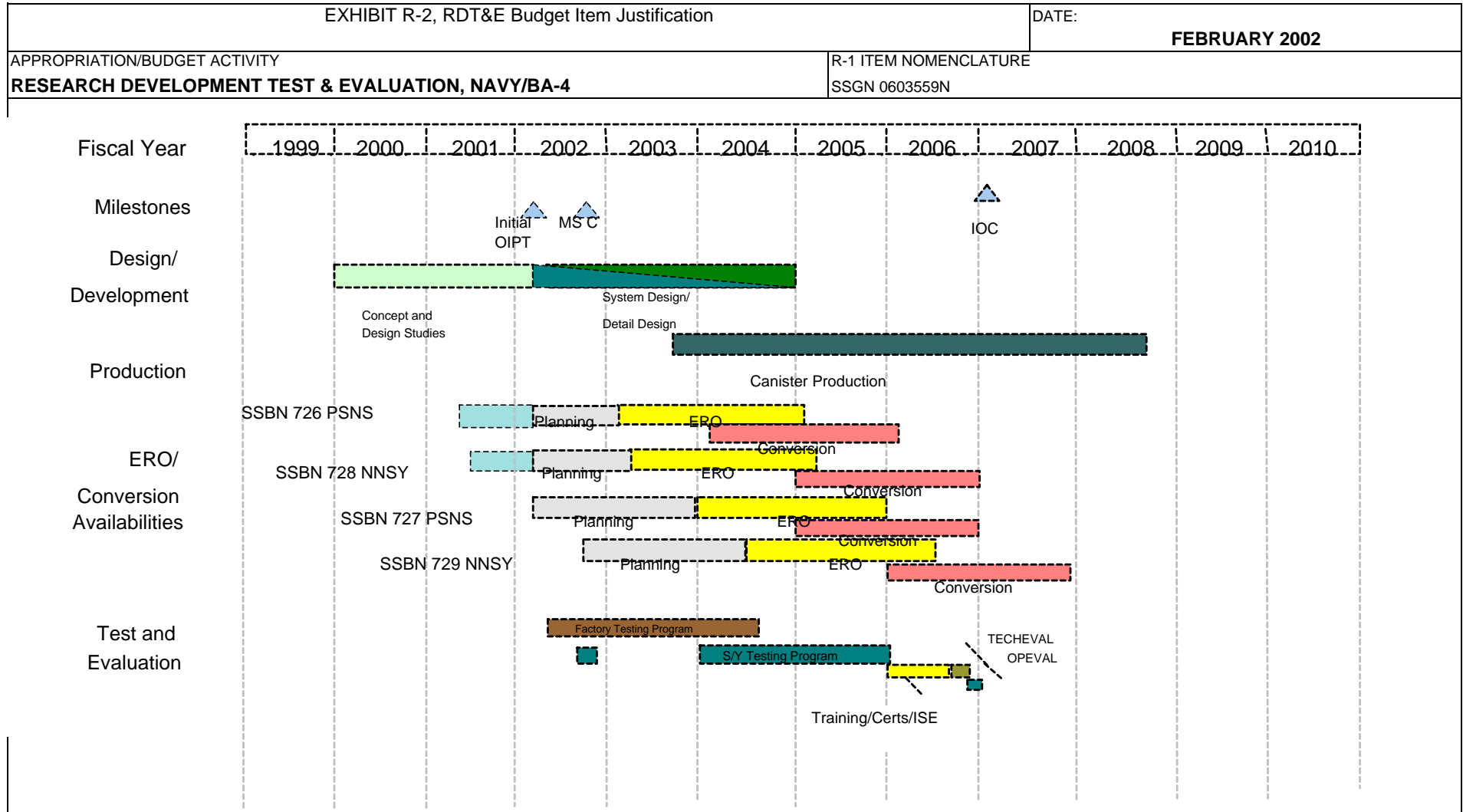
R-1 SHOPPING LIST - Item No. 57-4 of 57-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 4 of 7)

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CLASSIFICATION:



R-1 SHOPPING LIST - Item No. 57-5 of 57-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 5 of 7)

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: FEBRUARY 2002		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NAME AND NUMBER					
RDT&E, N/BA-4				SSGN 0603559N								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering	SS/CPFF	General Dynam Groton, CT		14.805	Various	14.000	Jan-02	26.547	Nov-02	7.410	62.762	TBD
Systems Engineering	WR	NSWC Carderock, MD		1.800	10/00	4.500	Jan-02	5.816	Nov-02	15.321	27.437	N/A
Systems Engineering	WR	NUWC Newport, RI		1.720	Various	3.607	Jan-02	2.805	Nov-02	6.960	15.092	N/A
AWS Risk Reduction	C/CPFF	Northrup Grumman,CA/Lockheed Martin,M		14.428	10/00	38.197	Jan-02	41.397	Nov-02	13.243	107.265	TBD
Systems Engineering	Various	Various		1.516	Various	11.300	Jan-02	2.907	Nov-02	3.060	18.783	N/A
Misc	Various	Various		0.046	Various	0.156	Jan-02	0.264	Nov-02	0.826	1.292	N/A
Subtotal Product Development				34.315		71.760		79.736		46.820	232.631	
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 57-6 of 57-7

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 7)

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			SSGN 0603559N									
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various		0.015	11/00	0.000		0.000		22.120	22.135	N/A
Live Fire Test & Evaluation	Various	Various								1.200	1.200	
											0.000	
Operational Test & Evaluation	Various	Various								2.800	2.800	
											0.000	
											0.000	
Subtotal T&E				0.015		0.000		0.000		26.120	26.135	
Remarks:												
Contractor Engineering Support	Various	Various		0.878	11/00	2.307	Nov-01	2.791	11/02	3.584	9.560	
Government Engineering Support											0.000	
Program Management Support	Various	Various		0.590	11/00	0.27	Jan-02	0		0.000	0.860	TBD
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management				1.468		2.577		2.791		3.584	10.420	
Remarks:												
Total Cost			0.000	35.798		74.337		82.527		76.524	269.186	
Remarks:												

R-1 SHOPPING LIST - Item No. 57-7 of 57-7

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 7)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: <div>February 2002</div>			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4				R-1 ITEM NOMENCLATURE Advanced Submarine Systems Development/0603561N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	128.391	124.142	107.389	114.129	111.190	115.037	116.191	0.000	816.469
Adv. Sub. Systems Development/S2033	47.463	49.020	48.784	54.204	53.601	58.641	59.333	CONT.	CONT.
Advanced Composite Sail/S2861	0.000	3.965	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Enhanced Performance Metal Brush/S2756	2.898	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Adv. Sub. Combt Sys. Dev/S0223	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
Conf Array Vel Sensor/S2753	4.837	2.081	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MK 48 ADCAP M M P/ARCI/S9039	0.000	8.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Common Towed Array Prog/S2754	5.798	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<p>(U) 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 feasible.</p> <p>(U) Project Unit S2033: The Advanced Submarine Research & Development Office identifies the most promising and emerging technologies for VIRGINIA Class Submarine and other submarine platform insertion and transitions them into specific demonstration/validation efforts. The program element is non-ACAT and transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency. This Program has been structured to support near term VIRGINIA Class insertion as well as core technologies in Hydrodynamics/Hydroacoustics, Affordability, and Stealth. Advanced systems developed under this program have potential for backfit into existing classes of submarines, supporting emerging requirements, and systems technology insertion into future submarine designs. Research and development investment factors used to select these technologies include: economic environment and return on investment; mission enhancement; and safety and survivability. The Program also supports two Information Exchange Programs with the United Kingdom, (one on submarine electromagnetic silencing and the second on submarine platform equipment, systems, and hull technology); operates the Large Scale Vehicle to provide at-sea test capability for propulsor, acoustic and non-acoustic signature reduction, remote vehicle R&D, and large scale hydrodynamic experimentation; operates the Hydrodynamic/Hydroacoustic Technology Center to enhance the Navy's ability to accurately, computationally predict hydrodynamic and hydroacoustic performance of submerged bodies; operates and supports the Intermediate Scale</p>									

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		Advanced Submarine Systems Development/0603561N	
<p>Measurement System; and provides life cycle support for the R&D Submarine modifications. In addition, the Program is constructing a second large scale vehicle, LSV2.</p> <p>(U) Project S2861 is authorized by Congress to develop Advanced Composite Sail Technology program to address the incorporation of full-scale design features and the complete spectrum of full-scale load specifications.</p> <p>(U) Project S2756 is authorized by Congress under Committee Report - Senate Rpt. 106-50 - for Advanced Metal Fiber Brush Technology. Metal Fiber electric motor brushes have the potential to significantly improve shipboard quality of life, reduce total ownership costs of ships and increase the survivability and operational reliability of electric motors and generators.</p> <p>(U) Project Unit S0223: This non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. The program addresses technology challenges that marginalize 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. Specific technology areas include transducers, hull and towed arrays, monostatic and bistatic sonar signal processing, net-centric warfare, target motion analysis (TMA), multiple contact processing. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific ship and aircraft applications.</p> <p>(U) Projects S2753, S2754 and S9039 are authorized by Congress to develop Conformal Acoustic Velocity Sonar (CAVES) technology, to develop fiber optic towed array technology for submarine acoustic systems as potential cost and performance improvements to future operational sonar systems and MK48 ADCAP torpedo improvement.</p>			
B. Program Change Summary:		FY2001	FY 2002
(U) FY 2002 President's Budget:		128,082	110,766
(U) Appropriated Value:		129,269	125,366
(U) Adjustments to FY2001/2002			
Appropriated Value/FY2002			
President's Budget:		309	13,376
(U) FY 2003 Pres Budget Submit:		128,391	124,142
			107,389

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 24)

UNCLASSIFIED

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	February 2002
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		Advanced Submarine Systems Development/0603561N	
(U) Change Summary Explanation:			
(U)S2033 Funding:			
FY 2001 net increase (\$1,291M) is attributed 01 actuals (30 Sep 01).			
FY 2002 net decrease of (-\$.437M) is attributed to Management reserve.			
FY 2003 net decrease of (-\$1,045M) is attributed to a decrease of (-\$.0152M) for BSO realignment residual issues, an increase of (\$0.136M) for BSO Inc. of PBD's, a decrease of (-\$.0117M) for SYSCOM Contractor Support, an increase of (\$6,000m) for N77 issues, adecrease of(-\$1.027M) for Carryover Spread, a decrease of (-\$5.700M) for 2 F/A 18's, an increase of (\$.053M) for NWCF rates, a increase of (\$.005M) for Military and Civilian and a decrease of (-\$.243M) for Nonpay Inflation.			
(U)S0223 Funding:			
FY 2001 decrease of (-\$1.572M) for 01 Actuals (30 Sep 01) and (-\$.028M) for minor ajustments.			
FY 2002 net decrease of (-0.658M) attributed to (-\$.0541M) for Management reserves and (-\$.0117M) for FFRDC.			
FY 2003 net decreases of (-\$.0510M) attributed to (-\$.0005M) for Reimbursable funding implication, (-\$.0180M) for BSO Realignment residual issues, (-\$.0490M) for SYSCOM Contractor Support, an increase of (\$7,000M) for N77 issues, decreases of (-\$.0354M) for Carryover Spread, (-\$.0015M) for NRL, (-\$6.300M) for F/A-18 Aircraft Off, (-\$.0371M) for Nonpay Inflation and a net increase of (\$0.004M) for Military and Civilian and (\$0.201M) for NWCF Rate adjustments.			
(U)S2753 Funding:			
FY 2001 no change.			
FY 2002 net decrease of (-\$.019M) for Management reserves.			

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 3 of 24)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	February 2002
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4		Advanced Submarine Systems Development/0603561N	
<p>(U)S2754 Funding: FY2001 no change</p> <p>(U)S2756 Funding: FY2001 no change</p> <p>(U)S2861 Funding: FY2002 net decrease of (-\$0.035M) is attributed to Management reserve.</p> <p>(U)S9039 Funding: FY2002 net decrease of (-\$0.075M) is attributed to Management reserves.</p> <p>(U) Schedule: Not Applicable.</p> <p>(U) Technical: Proceed with the advanced development of technologies as identified in Secretary of Defense Report on Nuclear Attack Submarine Procurement and Submarine Technology.</p>			

R-1 SHOPPING LIST - Item No. 58

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, N/BA-4	Advanced Submarine Dev/0603561N				Advanced Submarine Systems Development - S2033/Adv. Metal Fiber Brushes - S2756					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost	
Adv. Submarine Systems Dev. - S2033	47.463	49.020	48.784	54.204	53.601	58.641	59.333	CONT.	CONT.	
. Composite Sail - S2861	0.000	3.965	0.000	0.000	0.000	0.000	0.000	CONT.	CONT.	
Adv. Metal Fiber Brushes - S2756	2.898	0.000	0.000	0.000	0.000	0.000	0.000	COMP.	COMP.	
A. (U) 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 feasible.										
(U) Project Unit S2033: The Advanced Submarine Research & Development Office identifies the most promising and emerging technologies for the VIRGINIA Class Submarine and other submarine platform insertion and transitions them into specific demonstration/validation efforts. The program element is non-ACAT and transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency. This Program has been structured to support near term Virginia Class insertion as well as core technologies in Hydrodynamics/Hydroacoustics, Affordability, and Stealth. Advanced systems developed under this program have potential for backfit into existing classes of submarines, supporting emerging requirements, and systems technology insertion into future submarine designs. Research and development investment factors used to select these technologies include: economic environment and return on investment; mission enhancement; and safety and survivability. The Program also supports two Information Exchange Programs with the United Kingdom, (one on submarine electromagnetic silencing and the second on submarine platform equipment, systems, and hull technology); operates the Large Scale Vehicle (LSV) to provide at-sea test capability for propulsor, acoustic and non-acoustic signature reduction, remote vehicle R&D, and large scale hydrodynamic experimentation; operates the Hydrodynamic/Hydroacoustic Technology Center to enhance the Navy's ability to accurately, computationally predict hydrodynamic and hydroacoustic performance of submerged bodies; operates and supports the Intermediate Scale Measurement System; and provides life cycle support for the R&D Submarine modifications. In addition, the program is constructing a second large scale vehicle, LSV2.										
(U) Project S2756 is authorized by Congress under Committee Report - Senate Rpt. 106-50 - for Advanced Metal Fiber Brush Technology. Metal Fiber electric motor brushes have the potential to significantly improve shipboard quality of life, reduce total ownership costs of ships and increase the survivability and operational reliability of electric motors and generators.										

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 5 of 24)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Advanced Submarine Sys Dev/0603561N	PROJECT NAME AND NUMBER Adv. Submarine Systems Dev - S2033/Adv. Metal Fiber Brushes - S2756/Comp. Sail- S286

(U) Program Accomplishments and Plans:

1. (U) FY 2001 Accomplishments:

- (U) (\$15.608M) Stealth: Continued analysis and concept development of submarine portions of corporate Electric Drive. Continued development of advanced submarine propulsor technologies, internal transmission paths, Stealth Master Plan, Advanced Launchers, Advanced Electromagnetic Silencing, and hull radiation and echo formation (Adv. Coatings).
- (U) (\$6.877M) Hydrodynamics/Hydroacoustics: Continued development of elements of Integrated Computational Design Environment and analysis of hydrodynamic & hydroacoustic submarine performance (Maneuvering and Control). Developed and demonstrated techniques to improve hydrodynamic performance of submarines through modification of flow and lift characteristics (Powering and Resistance). Completed Rim Driven Thruster/Main Seawater pump development. Completed Advanced Sail development. Continued Advanced Composite Sail development.
- (U) (\$20.494M) Infrastructure: Continued operations and support for the Large Scale Vehicle, Hydroacoustic/Hydrodynamic Test Center(H/HTC), Intermediate Scale Measurement System (ISMS), R&D Submarine. Continued design and construction of the LSV 2 into the testing & acceptance phase. Initiated acceptance trials.
- (U) (\$3.340M) Total Ownership/Affordability: Continued development of Advanced Metal Fiber Brushes (\$2.898M from S2756).
- (U) (\$4.042M) Continued study and initiated demonstration for Payloads in compliance with Defense Science Board Report recommendations. Continued M&FD/HM&E Conform Studies and New Technology Assessment support.

\$50.361M TOTAL (\$47.463M (S2033) + \$2.898M (S2756))

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6 of 24)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	Advanced Submarine Sys Dev/0603561N	Advanced Sub Systems Development - S2033
<p>2. (U) FY 2002 Plan</p> <ul style="list-style-type: none"> - (U) (\$18.027M) Stealth: Continue development of submarine unique portions of corporate Electric Drive, advanced submarine propulsor technologies, internal transmission paths, Stealth Master Plan, Advanced Electromagnetic Silencing, and hull radiation and echo formation (adv. coatings). - (U) (\$8.965M) Hydrodynamics/Hydroacoustics: Continue development of elements of Integrated Computational Design Environment analysis of hydrodynamic and hydroacoustic submarine performance (Maneuvering and Control). Continue Composite Sail. - (U) (\$15.018M) Infrastructure: Continue operations and support for the Large Scale Vehicle, Hydroacoustic/Hydrodynamic Test Center(H/HTC), Intermediate Scale Measurement System (ISMS), R&D Submarine. Complete acceptance trials and take delivery of LSV 2. Initiate characterization experiments and coating applications to achieve IOC. - (U) (\$2.735M) Total Ownership/Affordability: Initiate full scale land based testing of Advanced Metal Fiber Brushes. - (U) (\$8.240M) Continue study and demonstrations for Payloads in compliance with Defense Science Board Report recommendations. Continue M&FD/HM&E Conform Studies and New Technology Assessment support. <p><u> </u> \$52.985M TOTAL (\$49.020M (S2033) + \$3.965M (S2861))</p> <p>3. (U) FY 2003 Plan</p> <ul style="list-style-type: none"> - (U) (\$16.883M) Stealth: Continue development of submarine unique portions of corporate Electric Drive, advanced submarine propulsor technologies, internal transmission paths, Stealth Master Plan, Advanced Electromagnetic Silencing, and hull radiation and echo formation (adv. coatings). - (U) (\$9.528M) Hydrodynamics/Hydroacoustics: Continue development of elements of Integrated Computational Design Environment analysis of hydrodynamic and hydroacoustic submarine performance (Maneuvering and Control). Continue Composite Sail. Re-continue Integrated Design. - (U) (\$14.953M) Infrastructure: Continue operations and support for the Large Scale Vehicle, Hydroacoustic/Hydrodynamic Test Center(H/HTC), Intermediate Scale Measurement System (ISMS), R&D Submarine. - (U) (\$1.665M) Total Ownership/Affordability: Install on submarine a complete set of Advanced Metal Fiber Brushes on a ship service motor generator set. - (U) (\$5.755M) Continue study and demonstrations for Payloads in compliance with Defense Science Board Report recommendations. Continue M&FD/HM&E Conform Studies and New Technology Assessment support. <p><u> </u> \$48,784M TOTAL</p>		

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 24)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification					DATE:			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER		PROJECT NAME AND NUMBER				
RDT&E, N/BA-4		Advanced Submarine Sys Dev/0603561N		Advanced Submarine Systems Development - S2033/Adv. Metal Fiber Brushes - S2756				
B. (U) Other Program Funding Summary: additional \$50M of SEALIFT National Defense Funds was appropriated in FY97, authorized in FY98 for LSV development. (U) Related RDT&E: Not applicable. C. (U) Acquisition Strategy: Not applicable. D. (U) Schedule Profile:								
		FY 2001	FY 2002	FY2003	FY2004	FY2005	FY2006	FY2007
PROGRAM	Launching of LSV 2.	Initiate propulsor advanced design developmnts.	Planned replacement of visualization computer server at H/HTC.	Technology refresh of ISMS.	Initiate next generation propulsor/hull/control surface concept development.	Planned replacement of classified & unclassified computer servers at H/HTC.	Internal Transmission Path piping/fitting path transition to Virginia Class.	
MILESTONES	Complete Rim Driven Thruster/main seawater pump development. Issue Stealth Master Plan. Terminate Flow Mgmt.	Initiate Advanced Maneuvering and Control development.	Planned start for technology refresh of ISMS.	Internal Transmission Path (ITP) mount down select.	Complete Adv. Metal Fiber Brushes, transition to PMS 392.	ITP full scale ADM fabrication.	ITP truss/deck (ADM) development.	
	Complete Adv. Sail development, transition to VIRGINIA class. Initiate lemtep launcher cost feasibility study. Initiate SSTG signature dev. Initiate Composite Adv. Sail vendor selection. Peel & stick transition. Electro-magnetic Silencing reprogramming. Develop advanced hull treatment plan. Transition dynamic bulk modules measurement system.	VIRGINIA 4th generation propulsor trial LSV 1.	Evaluate alternative Stern configurations. SEAWOLF steel sail trial, LSV 1.	Transition propulsor component technology to VIRGINIA class.	Continue 2010 sub propulsor dev. LSV 2.	Continue 2010 sub propulsor dev. LSV 2.	Distributed hull coating transition to Virginia Class.	
		Stealth Master Plan final report	Complete VA 4th gen. propulsor trial. LSV 2 SSN 774 support. Demo adv. Maneuvering & control concepts on LSV 2. Electromagnetic trial.	Electromagnetic accel-2 transition	Complete technology refresh of ISMS.	LSV 2 SSN 774 support.	Continue 2010 sub propulsor dev. LSV 2.	
		Select composite adv. Sail vendor.	Complete VA 4th gen. propulsor trial. LSV 2 SSN 774 support. Demo adv. Maneuvering & control concepts on LSV 2. Electromagnetic trial.		Continue 2010 sub propulsor dev. LSV 2. LSV 2 SSN 774 support. Complete composite adv. Sail development, transition to VA class.	Initiate external flow noise signature development.	Coating material data base, outer decoupler material certification.	
		Initiate Alternative Stern development. Troubleshoot SEAWOLF Acoustic issues LSV 1.	Complete Adv. Coating young modules tester. LSV 2 RAV install Hull treatment on pressure hull.	LSV 2 RAV install, new LSV 2 battery.	Continue 2010 sub propulsor dev. LSV 2. LSV 2 SSN 774 support. Complete composite adv. Sail development, transition to VA class.	Initiate external flow noise signature development.	Coating material data base, outer decoupler material certification.	
ENGINEERING	Initiate electric drive development.	ITP Mount down select	Complete Adv. Coating young modules tester. LSV 2 RAV install Hull treatment on pressure hull.	LSV 2 RAV install, new LSV 2 battery.	LSV 2 ODAS refresh.	LSV 2 RAV.	ITP transition to Virginia Class.	
MILESTONES	Complete upgrade/replace LSV range acoustic array.	Initiate young modulus test rig development.	LSV 2 RAV install Hull treatment on Sail. ITP mount development.	ITP - Test loop complete.	Internal transmission Path (ITP) piping flanking path design criteria.	Electromagnetic development.	ITP - airborne test plan.	
	Install maneuvering design analysis tool (MDAT) at H/HTC.	Complete Control Surface Design Data Sheet.		Coating ship impact & Adv. R&D coating Report.	ITP - WTL Syst. model. ITP - Deck demo test.	ITP - airborne review. Deck demo test comp.	Electromagnetic ADV. 1 development.	

R-1 SHOPPING LIST - Item No.

58

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 8 of 24)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification

February 2002

APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER		PROJECT NAME AND NUMBER			
RDT&E, N/BA-4		Advanced Submarine Sys Dev/0603561N		Advanced Submarine Systems Development - S2033/Adv. Metal Fiber Brushes - S2756			
	FY2001	FY 2002	FY2003	FY2004	FY2005	FY2006	FY2007
ENGINEERING MILESTONES	Continue advanced mount design, mount analysis test flanking path, shock analysis. SSN 22 coating characterization. Malice report & trial peel & stick. Malice full scale mock up test. Install Propulsor Design and analysis tool at H/HTC	Conduct composite Advanced Sail evaluation of vendor qualification. Begin hardware manufacture for advanced propulsor concepts.	LSV evaluation of propulsor component improvements. Complete manufacture of Advanced Propulsor concepts. Evaluate alternative stern components.	Complete VA advanced sail trials, LSV 2. Fabricate and demo full scale composite adv. Sail prototype. Initiate VIRGINIA advanced sail trials, LSV 2.	Composite adv. Sail complete design criteria and requirements document. Coating - outer decoupler material report, adv. coating demo.		
T&E MILESTONES	Intermediate scale land based testing for Advanced Metal Fiber Brushes. Complete EES warfare effectiveness analysis. If continued development is warranted, design mod to ASLF. Electro-magnetic Draft SRS. SSN 22 characterization sea- trial.	Demonstrate commutator operation for Advanced Metal Fiber Brushes - full scale. Electro-magnetic silencing US/UK sea trial - 9, prep SRS transition. Intermediate scale sea trials for brushes. Complete "no sail" trails LSV 1. Conduct LSV1 maneuvering characterization trial.	Internal transmission path (ITP) component testing of piping system. LSV 2 hydrodynamic performance trial. Adv. Propulsor concepts LSV trial. LSV 2 maneuvering characterization trial.	ITP truss/deck scaled test. External flow noise scaled trial. Hull coating ONR transition effort. Distributed hull coating scaled test. Advanced Propulsor concept LSV trials.		Hull coating large scale demo. Distributed coating demonstration.	Electro-magnetic silencing US/UK sea trial - 10 ITP mount/truss system test.
CONTRACT MILESTONES	Advanced Metal Fiber Brushes completion contract award. 50361	Accept delivery of LSV 2 to Navy. Procure new LSV 1 battery. 52985	Procure new LSV 2 battery. 48784				Procure new LSV battery 2. 59333

R-1 SHOPPING LIST - Item No.

58

(Exhibit R-2a, page 9 of 24)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-4			Advanced Submarine Sys Dev/0603561N			Advanced Submarine Systems Development/S2033								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date			Cost to Complete	Total Cost	Targ Value of Contract
Systems Engineering	S/CPFF	NNS Newport News, VA	43.450	3.300	12/00	1.000	12/01	2.580	12/02			24.200	71.950	67.800
Systems Engineering	S/CPIF	NNS Newport News, VA	14.482	3.800	12/00	1.650	12/01	4.852	12/02			59.200	83.984	80.000
Systems Engineering	S/CPFF	EB Groton, CT	48.706	1.800	12/00	3.774	12/01	3.500	12/02			CONT.	CONT.	37.300
Systems Engineering	WR	NSWC Bethesda, MD	152.062	11.643		13.000		10.488				CONT.	CONT.	
Systems Engineering	S/CPFF	ARL/PSU, State College,PA	33.397	1.600	12/00	4.213	12/01	4.000	12/02			CONT.	CONT.	
Systems Engineering	S/CPFF	APL/JHU	0.350	0.200	01/00									
Systems Engineering	WR	NUWC Newport, RI	71.292	0.800		0.775		0.790				CONT.	CONT.	
Systems Engineering	WR	NRAD San Diego, CA	0.660	0.400		0.350								
Systems Engineering	S/CPFF	KAPL Schenectady, NY	5.000	9.800		4.000		4.000				CONT.	CONT.	
Systems Engineering	S/CPFF	Cortana	3.180	0.000		0.000		0.000				CONT.	CONT.	
Systems Engineering	S/CPFF	ADI	0.000	0.300										
Program Management	CPFF	Anteon		0.138	01/01	0.140	10/01	0.028	10/01					
Program Management	CPFF	Vredenburg	0.090	0.115	01/01									
Program Management	CPFF	SPA		0.025	01/01									
Subtotal Product Development			372.669	33.921		28.902		30.238						
Remarks:														
EB's PY cost is greater than total value of contract due to a new contract award.														
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: Not applicable.														

R-1 SHOPPING LIST - Item Nc 58

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 10 of 24)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-4			Advanced Submarine Sys Dev/0603561			Advanced Submarine Systems Development/S2033/S2756/S2861								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Bethesda, MD	23.329	3.387		10.801		9.097				CONT.	CONT.	
Developmental Test & Evaluation	S/CPFF	NNS Norfolk, VA	3.480	6.100	12/00	2.257	12/01	2.149	12/02			66.800	80.786	67.800
Developmental Test & Evaluation	S/CPFF	EB Groton, CT	18.803	1.900	12/00	0.608	12/01	1.480	12/02			21.000	43.791	37.300
Developmental Test & Evaluation	S/CPFF	DARPA Fairfax, VA	3.000	0.650		3.975		3.100				0.000	10.725	3.000
Developmental Test & Evaluation	S/CPFF	NOESIS	1.711	3.340		2.735		1.600	12/02			0.000	9.386	1.200
Developmental Test & Evaluation	S/CPFF	SPA	0.957	0.600		0.515		0.700				0.000	2.772	0.600
Subtotal T&E			51.280	15.977		20.891		18.126						
Remarks:														
Contractor Engineering Support	S/CPFF	NNS Norfolk, VA	1.700			1.400							3.100	
Contractor Engineering Support	S/CPFF	EB Groton, CT	1.700			1.327							3.027	
Travel				0.125		0.090		0.100	11/02					
Government Engineering Support	WR	NSWC Bethesda, MD	1.000										CONT.	
Contractor Engineering Support		Rosenblatt	0.175	0.025	12/00								0.200	
Contractor Engineering Support		SPA	0.120	0.100	12/00				12/01					
Contractor Engineering Support		DDL Omni	0.020	0.020	12/00									
Contractor Engineering Support		EG&G	0.000	0.030	01/01									
Contractor Engineering Support		JJMA	0.120	0.013	11/00									
Contractor Engineering Support		ADI	0.105	0.050	11/00								0.155	
Contractor Engineering Support		MAC contract		0.100		0.375	12/01	0.320	12/02					
Subtotal Management			4.940	0.463		3.192		0.420				0.000	9.015	
Remarks: FY00 &01 includes congressional plus-up funds project unit S2756 for Metal Fiber Brushes in which all funds go to Noesis. FY01 & FY02 also includes project unit S2861 for Adv. Composite Sail.														
Total Cost			428.889	50.361		52.985		48.784						
Remarks:														

R-1 SHOPPING LIST - Item N 58

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 11 of 24)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		Advanced Submarine Dev/0603561N				PROJECT NAME AND NUMBER Advanced Submarine Combat Systems Development/S0223			
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
RDT&E Articles Qty									
<p>A. (U) 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 feasible.</p> <p>(U) Project Unit S0223: This non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. The program addresses technology challenges that marginalize 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. Specific technology areas include transducers, hull and towed arrays, monostatic and bistatic sonar signal processing, net-centric warfare, target motion analysis (TMA), Environmental Intelligence, multiple contact processing. Program office supports twelve international information exchange agreements. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific ship and aircraft applications.</p> <p>(U) Program Accomplishments and Plans:</p> <p>(U) FY 2001 Accomplishments (S0223):</p> <ul style="list-style-type: none"> - (\$7.215) Advanced Tactical Control – Completed APB(T)-01 development which was focused on close encounter requirements. Conducted combat system performance assessment based on the defined metrics. Evaluated candidate technologies for APB(T)-02. - (\$31.443) Advanced Sonar System and Processing -Completed performance assessment and transition of APB(A)-00 to BQQ -10 project and VIRGINIA. Completed development, and initiated testing and transition of APB(A)-01 for low frequency. Completed development and initiated testing and transition of APB(A)-01 for mid and high frequency. Initiated APB(A)-02 to address initial acoustic scene management functionality including matched field techniques, new tracking, and automated passive operator search support. 									

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-3, page 12 of 24)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: January 2002			
APPROPRIATION/BUDGET ACTIVITY		PROJECT NAME AND NUMBER							
RDT&E, N/BA-4		Advanced Submarine Dev/0603561N				Advanced Submarine Combat Systems Development/S0223			
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
RDT&E Articles Qty									
<p>- (\$3.800) Advanced Towed Arrays- Continued 3-line array development. Conducted subsystem CITs. Fabricated 3-line array ADM. Fabricated 3-line signal processor ADM. Conducted system integration & testing.</p> <p>- (\$6.100) Advanced Hull Arrays- Continued development of CAVES technology - Completed installation of CAVES Patch array on USS NEWPORT NEWS (SSN 751). Conducted installation of CAVES Patch instrumentation. Conducted CAVES Patch test. Began analysis of CAVES Patch Test. Continued documentation of CAVES program. Conducted CACTISS III test. Conducted planning for installation of CAVES Large Vertical Aperture (LVA) sonar on VIRGINIA hull 05 instead of CAVES WAA. Continued Noise Audit Model for Integrated Bow Conformal (IBC) Array and LVA. Conducted modeling of CAVES LVA performance. Began modeling of Integrated Bow Conformal notional array performance. Construct ed1/4 scale bow dome for material, beamforming, and self noise testing. Conducted material testing for inner decoupler use in CAVES LVA and IBC. Continued planning for demonstration test.</p> <p>- (\$5.700) High Frequency Sonar Program- Continued processing improvements including PUMA, evaluation and testing of APB01 initiatives. Continued investigation of HF bow conformal requirements, design trade-offs, and planning efforts. Transitioned on-going processing developments to advance processing. Continued PUMA processing improvements into LMRS precision mapping efforts. Initiated PUMA/TEDS/MEDAL integration.</p> <p>- (\$9.000) Payloads/Sensors Program- Initiated a cooperative Navy/DARPA effort to identify and assess emerging technology concepts that will provide significant operational payoff within the context of current and future submarine missions consistent with Navy strategic concepts.</p> <p>- (\$3.637) Fiber Optic Technology Transition - Risk reduction to assure smooth transition to Submarine Program.</p> <p>- (\$500) Test & Evaluation - Conducted APB(T) -01 sea tests, HF sea tests, and hull array testing.</p> <p>\$67,395 TOTAL</p>									

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: <div>January 2002</div>				
APPROPRIATION/BUDGET ACTIVITY					PROJECT NAME AND NUMBER				
RDT&E, N/BA-4	Advanced Submarine Dev/0603561N				Advanced Submarine Combat Systems Development/S0223				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
RDT&E Articles Qty									
<div>FY 2002 Plan (S0223):</div> <div><div>- (\$10.000) Advanced Tactical Control – Complete APB(T)-01 Sea Test. Incorporate APB(T)-01 upgrades based on at-sea test and transition to CCS MK2 and VIRGINA Class Program for system level integration. Complete Development and initiate Sea Test planning of APB(T)-02 , focusing on high density contact management and integration of non acoustic sensors.</div><div>- (\$28.451) Advanced Sonar System and Processing – Complete transition of APB(A)-01 to BQQ-10 program and VIRGINIA. Complete development and initiate transition and test of APB(A)-02 to BQQ-10 and VIRGINIA program. Initiate definition/development of APB(A)-03 for follow-on acoustic scene management functionality including active intercept, TSMS, integrated active and passive processing, torpedo DCL, ACINT 21and improvements automated alertment, contact localization and tracking and sonar tactical decision aids.</div><div>- (\$.900) Advanced Towed Arrays - Conduct 3 line R/V sea test. Conduct 3 line submarine demonstration. Perform 3 line data analysis.</div><div>- (\$2.500) Advanced Hull Arrays - Begin Large Vertical Array (LVA) Advanced Development Model (ADM) planning and design for installation on an SSN 688I class submarine. Complete LVA optimization study. Continue integration of CAVES technology into advanced broad frequency coverage, large horizontal and vertical aperture flank and bow sonar concept development. Continue development of noise audit model for Integrated Bow Conformal (IBC) Array. Begin 1/4 scale bow dome testing. Complete CACTISS III test data analysis and issue report. Conduct Broadband active sonar demonstation in conjunction with High Frequency Sonar Program.</div><div>- (\$5.700) High Frequency Sonar Program-Transition processing improvement, including PUMA, into APB 02. Continue improvements of HF passive and LPI active. Complete investigation of HF bow conformal requirements. Continue PUMA LMRS improvements efforts. Continue PUMA/TEDS/MEDAL integration.</div><div>- (\$12.600) Payloads/Sensors Program- Continue cooperative efforts to identify, define, assess and evaluate emerging sensor and payload concepts for potential to provide significant operational benefit. Determine the development and transition path to bring technologies to the future submarine combatants.</div><div>- (\$.500) Test & Evaluation - Conduct APB(T) -01 sea tests, HF sea tests, and hull array testing. Conducted Towed Array APB lake test. Continued at-sea data gathering program. Initiated planning for HF APB Sea Test.</div></div> <div>\$60,651TOTAL</div>									

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROJECT NAME AND NUMBER							
RDT&E, N/BA-4		Advanced Submarine Dev/0603561N				Advanced Submarine Combat Systems Development/S0223			
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
RDT&E Articles Qty									
<p>FY 2003 Plan (S0223):</p> <ul style="list-style-type: none"> -\$10.000) Advanced Tactical Control - Complete APB(T)-02 Sea Test. Development of enhancements based on APB(T)-02 Sea Test lessons learned. Complete development and initiate transition and testing of APB(T)-03. APB(T)-03 will incorporate enhancements to support Netcentric Undersea Warfare, enhanced offboard sensor exploitation, and attack center automation/workload reduction. -\$24.405) Advanced Sonar System Processing - Complete APB(A)-02 Sea Test. Development enhancements based on APB(A)-02 Sea Test lessons learned. Complete development and initiate transition testing of APB(A)-03. APB(A)-03 will incorporate enhancements to automation in tracking, detection, localization, Active Intercept, and other near term improvements. -\$7.000) Advanced Hull Arrays - Conduct detail design of Large Vertical Array (LVA) Advanced Development Model (ADM). Begin construction of LVA array. Conduct vertical noise data collection in support of Large Vertical Array (LVA) optimization. Continue integration of CAVES technology into advanced broad frequency coverage, large horizontal and vertical aperture flank and bow sonar concept development. -\$13.000) Payloads/Sensors Program - Two industry consortia (Team 2020 and the Forward Pass Consortium) are executing five demonstrations in the component development phase of this effort. Additionally the consortia will continue an industry technology incubator effort aimed at defining new start demonstrations to be selected in FY-03. The team 2020 demonstrations started late in FY-01 and complete in FY-04 are the Flexible Payload Module (FPM), Stealthy Affordable Capsule System (SACS), Processing, and Small UAV (SUAV). Team Forward Pass will execute the Broaching Universal Buoyant Launcher (BUBL) demonstration with the same schedule. For FY-03, interim testing will be conducted for all demonstrations started in FY-01. -\$900) Multi-Line Towed Array Test & Evaluation - Conduct 3-line sea tests on Research Vehicle and submarine, perform data analysis, and initiate transition to EDM development. -\$2.800) High Frequency Sonar Program-Transition processing improvement, including PUMA, into APB 02. Continue improvements of HF passive and LPI active. Complete investigation of HF bow conformal requirements. Continue PUMA LMRS improvements efforts. -\$500) Test & Evaluation - Conduct APB (Acoustic and Tactical)-03 sea tests, MF and HF sea tests, sphere and hull array testing. Conduct Towed arrays, high frequency sail array, active intercept sensors. and Sonar Tactical Decision Aids (STDA). Initiate the incorporation of Weapons (W) to improve the Combat Control systems. <p>\$58,605 TOTAL \$58,605 TOTAL</p>									

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROJECT NAME AND NUMBER							
RDT&E, N/BA-4		Advanced Submarine Dev/0603561N			Advanced Submarine Combat Systems Development/S0223				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	67.395	60.651	58.605	59.925	57.589	56.396	56.858	CONT.	CONT.
RDT&E Articles Qty									
<p>B. (U) Other Program Funding Summary: Not applicable.</p> <p>(U) Related RDT&E: Not applicable.</p> <p>C. (U) Acquisition Strategy: Plan to use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.</p>									

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EXHIBIT R-2a, RDT&E Project Justification										DATE:							
APPROPRIATION/BUDGET ACTIVITY					PROJECT NAME AND NUMBER					February 2002							
RDT&E, N/BA-4					Advanced Submarine Dev/0603561N					Advanced Submarine Combat Systems Development/S0223							
T a s k N a m e										2 0 0 1				2 0 0 2			
										Q	Q	Q	Q	Q	Q	Q	Q
A d P r o B u (A c o u s t i c																	
A P S T e s t 0 1																	
T r a A P t A R C I																	
A P S T i n c H F S P																	
T r a A P t A R C I																	
A P S T e s t 0 3																	
T r a A P t A R C I																	

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification										DATE:											
APPROPRIATION/BUDGET ACTIVITY										PROJECT NAME AND NUMBER											
RDT&E, N/BA-4										Advanced Submarine Dev/0603561N											
										Advanced Submarine Combat Systems Development/S0223											
T a s k N a m e										2 0 0 1				2 0 0 2				2 0 0 3			
										Q t	Q t	Q t	Q t	Q t	Q t	Q t	Q t	Q t	Q t	Q t	Q t
T r a n A P t c A R C I																					
A d v a P r o c B u (T a c t i c a l)																					
A P B A l g o E v a l & L a T e s t i n g																					
A P B S e T e T r a n t c C C C O 7 7 6																					
A P B A l g o E v a l u L a & S e T e T r a n t o i C C C O 7 7 6																					
A P B A l g o E v a l u L a & S e T e T r a n t o i C C C O 7 7 7																					
E n v i r o n t e l l i g e n c e																					
P U S e T e s t																					
I n i M O t r a n t c A P B (A) - 0 1																					
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L b o t i n v e d a t r a n t c A P B (A)																					

CLASSIFICATION:








EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROJECT NAME AND NUMBER Advanced Submarine Dev/0603561N			Advanced Submarine Combat Systems Development/S0223			

T a s k N a m e	2 0 0				1 2 0 0				2 2 0 0			
	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
C A V E S												
C A l a t e s t i n g												
S T e o C A P a t c h												
C A L T A n a l y s i s												
C A S T A n a l y s i s												
L f r e n c a u m d o t o t r a n s												
O D e t r a n s i t i o n												
R e t e p a r r a y												

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE:											
APPROPRIATION/BUDGET ACTIVITY						PROJECT NAME AND NUMBER											
RDT&E, N/BA-4			Advanced Submarine Dev/0603561N			Advanced Submarine Combat Systems Development/S0223											
Task Name						2001				2002				2003			
						Q tr 1	Q tr 2	Q tr 3	Q tr 4	Q tr 1	Q tr 2	Q tr 3	Q tr 4	Q tr 1	Q tr 2	Q tr 3	Q tr 4
IntegrateBowConform(IBC)																	
RequiremeandTradeoStudies																	
QuarteScaleBowDom Test																	
IncorporaPatcITes Resultin models																	
Dura-MaterizCharacterizatStudyComplete																	
OuteDecouplIDevelopm tBegins																	
BeginADMDesign																	
LargeVerticaApertureArray																	
LocalizatiPerform anAssessment																	
PM\$450DecisioonLVA																	
BeginADMArrayTrad tStudy& PrelirDesign																	
BeginAdvanceProcuremeDetaDesign																	
BeginADMInstallationSSN688I																	
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE:											
APPROPRIATION/BUDGET ACTIVITY						PROJECT NAME AND NUMBER											
RDT&E, N/BA-4						Advanced Submarine Dev/0603561N						Advanced Submarine Combat Systems Development/S0223					
T a s k N a m e						2 0 0 1				2 0 0 2				2 0 0 3			
						Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
T B M u I T o A r (M L T A)																	
L a t e s i n l i n e v a l u a t i o n																	
P r d t h l i n e																	
T h r c r i d e r e v i e w																	
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I n i T h r f i b o p p r o g r a m																	
D e w a d e s u b s y s t e m s																	
I n t e a l a t e s t i																	

R-1 SHOPPING LIST - Item No. 58

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 21 of 24)

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Advanced Submarine Sys Dev/0603561N			Advanced Submarine Combat Systems Development/S0223						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	23.148	15.827	10/00	13.646	10/01	12.275	10/02	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	0.500	0.500	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NRL/Washington	1.900	1.000	10/00	0.800	10/01	0.800	10/02	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.240	0.250	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NSWC Carderock, MD	5.082	2.750	10/00	0.700	10/01	1.400	10/02	CONT.	CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NSWC Dahlgren	0.000	0.048	10/00	0.080	10/01	0.080	10/02	CONT.	CONT.	
Product Development	PD	ONI, Washington	0.735	0.735	12/01	0.870	12/01	0.900	12/02	CONT.	CONT.	
Product Development	C/CPFF	Lockheed-Martin,VA	3.371	3.250	-	3.000	-	3.214	12/02	CONT.	CONT.	
Product Development	C/CPFF	Sanders Assoc. (L-M),NH	0.902	1.000	11/00	0.750	11/01	0.750	12/02	CONT.	CONT.	
Product Development	RCP	NSMA	0.150	0.180	-	0.180	-	0.180	11/02	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	1.740	1.750	12/00	1.750	12/01	1.800	12/02	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Labs	1.500	1.620	12/00	1.000	12/01	1.500	12/02	CONT.	CONT.	
Product Development	RCP	ONR/MCCI/METRON	1.200	1.200	01/01	0.750	12/01			CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	0.400	0.750	-	0.500	-	0.440	12/02	CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	0.810	1.099	-	1.000	-	0.927	-	CONT.	CONT.	
Product Development	RCP	ONR/GTRI	1.050	1.000	01/01	0.000	-	0.000	-	CONT.	CONT.	
Product Development	SS/CPFF	APL/JHU, MD	6.895	7.348	01/01	7.200	01/02	7.200	01/03	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.025	0.050	12/00	0.050	12/01	0.050	12/02	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	5.890	7.000	01/01	6.250	12/01	1.500	12/02	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	0.825	0.350	12/00	0.350	12/01	0.350	12/02	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	0.357	0.150	01/01	0.185	01/02	0.150	01/03	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.040	0.040	10/00	0.030	10/01	0.030	10/02	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.206	0.432	10/00	0.200	10/01	0.140	10/02	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	4.500	4.500	12/00	5.000	-	5.915	12/02	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.000	0.095	-	0.100	-	0.100	10/02	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603	0.000	-	0.000	-			CONT.	CONT.	
Product Development	CPFF	NNS, VA	0.000	0.000	-	0.000	-			CONT.	CONT.	
Product Development	MIPR	DARPA, VA	0.000	9.000	12/00	12.600	12/01	13.000	12/02	CONT.	CONT.	

R-1 SHOPPING LIST - Item No. 58

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 22 of 24)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Advanced Submarine Sys Dev/0603561N			Advanced Submarine Combat Systems Development/S0223						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SBIRs / BAAs	C/CPFF	Various	5.584	0.041	Various	0.684	Various	1.625	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315	0.000	-	0.000	-	0.000		CONT.	CONT.	
Product Development	Various	Various	0.811	1.733	Various	0.092	Various	0.750	Various	CONT.	CONT.	
Subtotal Product Development			74.815	63.698		57.767		55.076		CONT.	CONT.	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: This is a Non Acquisition Program which therefore includes no indirect support costs.												

R-1 SHOPPING LIST - Item No. 58

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 23 of 24)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N/BA-4			PROGRAM ELEMENT Advanced Submarine Sys Dev/0603561N			PROJECT NAME AND NUMBER Advanced Submarine Combat Systems Development/S0223						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	0.425	0.000	10/00	0.450	10/01	1.140	10/02	CONT.	CONT.	
Developmental Test & Evaluation	Various	Various	0.050	1.622	Various	0.050	Various	0.500		CONT.	CONT.	
Operational Test & Evaluation										0.000	0.000	
GFE										0.000	0.000	
Subtotal T&E			0.475	1.622		0.500		1.640		CONT.	CONT.	
Remarks:												
Program Management Support	C/CPFF	Integrated Product Dec, CT	0.200	0.250	Various	0.000	Various			CONT.	CONT.	
Program Management Support	C/CPFF	Stanley Associates, VA	0.900	1.099	12/00	1.000	12/01	1.000	12/02	CONT.	CONT.	
Program Management Support	Various	Various	0.200	0.000	-	0.000	12/01	0.844	12/02	CONT.	CONT.	
Program Management Support	Various	EG&G	0.000	0.587	Various	1.200	12/01	0.000	-	CONT.	CONT.	
Program Management Support	Various	Anteon Corporation	0.000	0.064	Various	0.134	12/01	0.000	-	CONT.	CONT.	
Government Engineering Support											0.000	
Travel			0.050	0.075		0.050		0.045			0.220	
Overhead											0.000	
Subtotal Management			1.350	2.075		2.384		1.889		CONT.	CONT.	
Remarks:												
Total Cost			76.640	67.395		60.651		58.605		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 58

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

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:			
APPROPRIATION/BUDGET ACTIVITY							R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4							Submarine Tactical Warfare Systems/0603562N			
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		4,172	9.323	11.601	6.763	6.818	6.918	7.033	CONT.	CONT.
Advanced Sub. Spt. Equipment/F0770		2.390	3.299	4.350	4.490	4.517	4.574	4.645	CONT.	CONT.
Multi-Line Towed Array/S9040		0.000	3.965	0.000	0.000	0.000	0.000	0.000	CONT.	CONT.
Sub. Arctic Warfare Development/S1739		1,782	2.059	7.251	2.273	2.301	2.344	2.388	CONT.	CONT.
Quantity of RDT&E Articles		1	4	2	3	3	0	0	CONT.	CONT.

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 Development Program. The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D) for Electronic Warfare Support (ES) and Imaging technologies. The goal of ASSEP is to increase submarine operational effectiveness through advanced R&D to increase submarine capabilities in the areas of Threat Warning/Self Protection; Situational Awareness; and Intelligence, Surveillance, and Reconnaissance. A continuing need exists to improve submarine 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.

B. (U) Program Change Summary: (show total funding, schedule, and technical changes for the program element that have occurred since the last submission).

	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	4.317	5.405	5.690
(U) Appropriated Value:	4.356	9.405	
(U) Adjustments to FY 2001/2002 Appropriated Value/FY2002 Presidents Budget:	-0.184	3.918	5.911
(U) FY 2003 Pres Budget Submit:	4.172	9.323	11.601

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 12)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	R-1 ITEM NOMENCLATURE Submarine Tactical Warfare Systems/0603562N	
<p>(U) Change Summary Explanation:</p> <p>(U) Funding: FY2001: Decrease of (\$0.184K) is a result of .7% Pro-Rata (\$-0.30K), Government Wide Rescission (\$-0.9K), SBIR assessments (\$0.49K) , (\$0.48K) for June 2001 BTRs, and minor adjustments (\$-0.048K).</p> <p>FY2002: Net increase of (\$3.918K) is due to congressional increase for Multi-Line Towed Array (\$4.000K) and minor adjustments (\$-0.82K).</p> <p>FY2003: Net increase of (\$5,911K) is due to N77 issue for F0770 to develop improved Communications Acquisition and Direction Finding sensors and processing capability (+\$1.000K), BSO realignment issues for project S1739 (+\$5,073K) and minor adjustments (\$-0.162K). S1739 increase of (+\$3.580) is due to Sponsor redistribution of funds from WPN/PE0204284N to support conduct of MK48 ADCAP Mod 6 developmental testing in cold water, littoral environments.</p> <p>(U) Schedule: Addition of Ice Camp in FY03</p> <p>(U) Technical: Not applicable.</p>		

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 12)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, N/BA-4	Submarine Tactical Warfare Sys/0603562N				Advanced Submarine Support Equipment Program (ASSEP)/F0770					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		2.390	3.299	4.350	4.490	4.517	4.574	4.645	CONT.	CONT.
RDT&E Articles Qty		0	2	1	1	2	0	0	CONT.	CONT.

A. (U) Mission Description and Budget Item Justification: This program develops submarine ES equipment and image processing technology. A continuing need exists to improve submarine capabilities in these areas to improve 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 effective in conducting 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 the counter detection threat. The Situation 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 that are available from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility demonstration models (FDMs) are performed to develop realistic methods for evaluating the improvements, including deployment on submarines for testing. Threat Warning/Self Protection sub-projects include: Mast Signature Reduction (MSR), Low Probability of Intercept (LPI) Receiver, Low Band Of Coverage (Single Mast Operations), and ES Frequency Extension. Situational Awareness sub-projects include: Periscope Heads Up Display, Realtime Rangefinder, Digital Periscope, ES Vulnerability Server (EVS), Multi-Sensor Data Fusion, and Communications Acquisition Direction Finding (CADF) Lite for the AN/BLQ-10. Intelligence, Surveillance and Reconnaissance sub-projects include: Passive Surveillance Radar (PSR), Imaging Enhancements, Submarine Offboard Sensors (UAV/UUV Pay Load) and Modular Imaging System. All programs funded in this project are non-acquisition category programs described by Non-Acquisition Program Definition Document (NAPDD) # 556-872-872E1 which is currently under revision. The test articles identified consist of critical components of FDM's that will be fully developed during engineering development into Engineering Development Models (EDM's).

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 12)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Sys/0603562N	PROJECT NAME AND NUMBER Advanced Submarine Support Equipment Program (ASSEP)/F0770

(U) Program Accomplishments and Plans:

1. (U) FY 2001 Accomplishments:

- (U) (\$ 0.287) Continued Mast Signature Reduction techniques and material investigation.
- (U) (\$ 1.769) Continued ES Vulnerability Server Passive Surveillance Radar, Photonics Imaging Enhancement software, and Low Band DF Coverage development.
- (U) (\$ 0.334) Completed CCS Interface for SSN 688, Integrated ES Workstation, and Counter Detection/Range Assessment development.

2. (U) FY 2002 Plans:

- (U) (\$ 0.528) Continue MSR techniques and material investigation.
- (U) (\$ 1.880) Continue Low Band DF Coverage, Passive Surveillance Radar, ES Vulnerability server, and Imaging Enhancement software development.
- (U) (\$ 0.891) Initiate LPI Receiver, Frequency Extension, Periscope Heads Up Display, Realtime Range Finder, and Offboard Sensors development.

3. (U) FY 2003 Plans:

- (U) (\$ 0.804) Continue MSR techniques and material investigation.
- (U) (\$ 2.359) Continue Low Band DF Coverage, LPI Receiver, Frequency Extension, Periscope Heads Up Display, Realtime Range Finder, Imaging Enhancement software and Offboard Sensors.
- (U) (\$ 0.187) Complete ES Vulnerability Server and Passive Surveillance Radar development.
- (U) (\$ 1.000) Initiate development of CADF Lite for AN/BLQ-10.

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 12)

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CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare Sys/0603562N	PROJECT NAME AND NUMBER Advanced Submarine Support Equipment Program (ASSEP)/F0770

B. (U) Other Program Funding Summary: Not applicable.

(U)Related RDT&E:

(U) PE 0604503N(Submarine System Equipment Program)

(U) PE 0604558N(New Design SSN Development)

(U) PE 0604777N(Navigation /ID Systems)

C. (U) 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 Submarine Tactical Requirements Group (STRG) requirements, the 2000 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 and SSN21 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.

D. (U) Schedule Profile. See attached schedule.

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 12)

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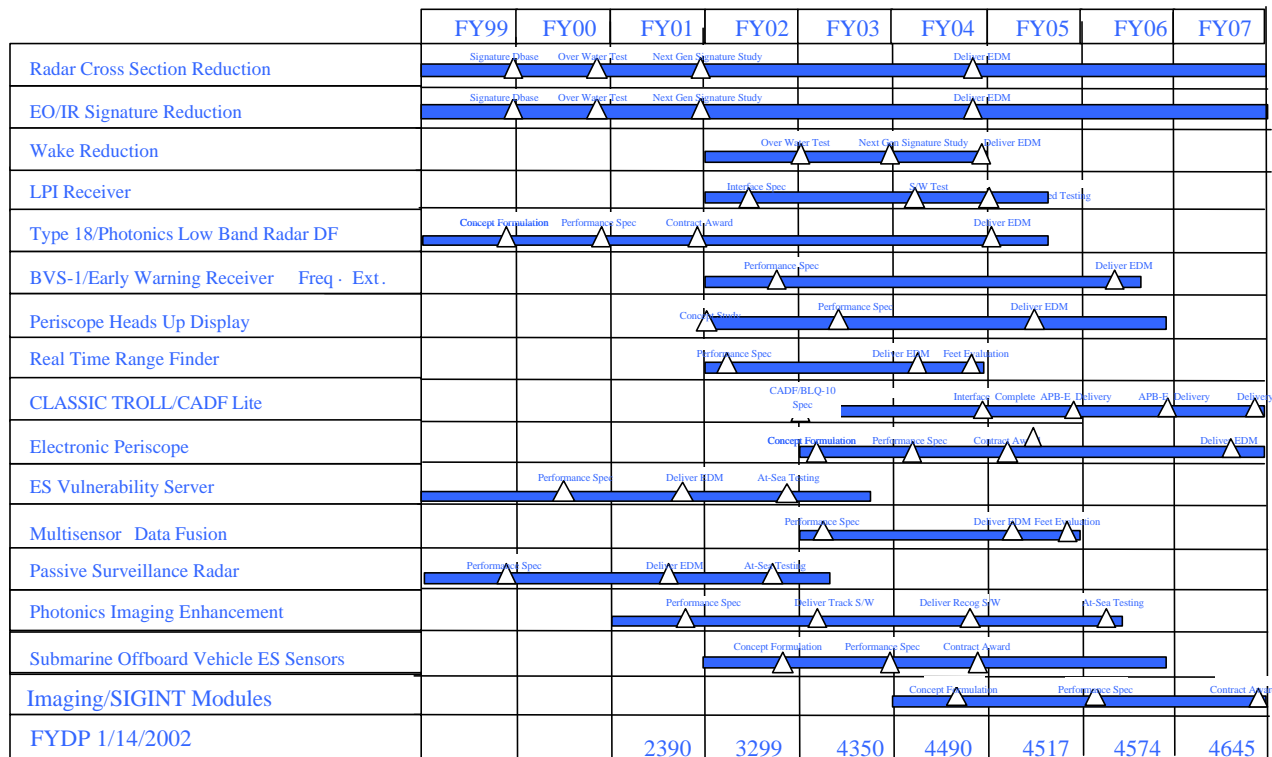
CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification			DATE:
			October 200
			EBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, N/BA-4	Submarine Tactical Warfare Sys/0603562N	Advanced Submarine Support Equipment Program (ASSEP)/F0770	

ASSEP Schedules

(Revised 10/15/2001)



R-1 SHOPPING LIST - Item No. 59

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6 of 12)

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Sub Tactical Warfare Systems/0603562N			Advanced Submarine Support Equipment Program (ASSEP)/F0770						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	BAE/Argon	0.000	0.000		0.000		1.000	12/02	TBD	TBD	TBD
Ancillary Hardware Development											0.000	
Systems Engineering	WR	NUWC Newport, RI	9.283	0.483	10/00	0.797	10/01	1.186	10/02	CONT.	CONT.	N/A
	WR/RC	NAWC China Lake	1.312	1.149	10/00	1.455	10/01	0.975	10/02	CONT.	CONT.	N/A
Licenses											0.000	
Tooling											0.000	
GFE	N/A	N/A									0.000	
Miscellaneous	Various	Various	9.373	0.555	Various	0.827	Various	1.012	Various	CONT.	CONT.	N/A
Award Fees											0.000	
Subtotal Product Development			19.968	2.187		3.079		4.173		CONT.	CONT.	
Remarks:												
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Engineering Technical Services	C/CPFF	GRCI, Mclean, Va.	0.989	0.030	10/00	0.050	10/01	0.050	11/02	CONT.	CONT.	N/A
Technical Data											0.000	
GFE											0.000	
Subtotal Support			0.989	0.030		0.050		0.050		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 59

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 12)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Sub Tactical Warfare Systems/0603562N			Advanced Submarine Support Equipment Program (ASSEP)/F0770						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Management Support Services	C/CPFF	Various	1.314	0.150	10/00	0.170	11/01	0.127	11/02	CONT.	CONT.	N/A
Studies Analysis & Evaluations											0.000	
Travel	TO's	Various	0.166	0.023	10/00	0.000		0.000		0.000	0.189	N/A
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			1.480	0.173		0.170		0.127		CONT.	CONT.	
Remarks:												
Total Cost			22.437	2.390		3.299		4.350		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 59

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 12)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N				PROJECT NAME AND NUMBER Submarine Special Operations Support Development S1739					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	1.782	2.059	7.251	2.273	2.301	2.344	2.388	CONT	CONT
RDT&E Articles Qty	Arctic ex 1	Arctic ex 2	Arctic ex 1	Arctic ex 2	Arctic ex 1			CONT	CONT
<p>A. (U) Misison Description a Budget Item Justification: This program 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 throught 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.</p> <p>B. (U) Project S9040 is authorized by Congress to develop Fiber Optics Multi-Line Towed Array.</p> <p>(U) Program Accomplishments and Plans:</p> <p>1. (U) FY 2001 Accomplishments:</p> <ul style="list-style-type: none">(U) (\$1.782) Conduct/Support Ice Exercise 1-01. <p>2. (U) FY 2002 Plans</p> <ul style="list-style-type: none">(U) (\$1.959) Conduct/Support ICEX and ICEOPS operations. Prep for FY03 Ice Camp(U) (\$0.100) Develop database of Arctic operations surfacing data. Initiate Structural Analysis of VA Class Sail. <p>3. (U) FY 2003 Plans</p> <ul style="list-style-type: none">(U) (\$7.051) Provide planning, logistics and construction support for Ice Camp Operations.(U) (\$0.200) Continue Structural Analysis of VA Class Sail.									

R-1 SHOPPING LIST - Item No. 59

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 9 of 12)

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification																	DATE:		February 2002																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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R-1 SHOPPING LIST - Item No. 59

 Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 10 of 12)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Submarine Tactical Warfare Sys/0603562N			Submarine Special Operations Support Development S1739						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 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	0.100			0.100	10/01	0.200	11/02	CONT	0.400	
Systems Engineering		EB Corp	0.010									
Systems Engineering	WR	NSWC INDIAN HEAD	0.051									
Systems Engineering	WR	SPAWAR		0.020	01/01	0.050	01/01	0.050	11/01	CONT		
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.161	0.020		0.150		0.250		0.000	0.581	
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 59

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 11 of 12)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Submarine Tactical Warfare Sys/0603562N			Submarine Special Operations Support Development S1739						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVRON Five	1.887	1.591	11/00	1.759	11/01	3.770	11/02	Cont.	9.007	Cont.
Developmental Test & Evaluation	WR			0.015	05/01							
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGATE	0.050			0.050	10/01			Cont.	Cont.	Cont.
Developmental Test & Evaluation	WR	CMDR,2nd NAVCON BRIGATE		0.050	01/01			0.150	11/02			
Developmental Test & Evaluation	SS/CPFF	APL/University of Washington						3.000	10/01		3.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			1.937	1.656		1.809		6.920		0.000	12.322	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support			0.128	0.096	11/00	0.090	11/00	0.071	11/02	Cont.	0.385	Cont.
Travel			0.010	0.010		0.010		0.010	11/02	Cont.	0.040	Cont.
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.138	0.106		0.100		0.081		0.000	0.425	
Remarks:												
Total Cost			2.236	1.782		2.059		7.251				
Remarks:												

R-1 SHOPPING LIST - Item No. 59

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 12 of 12)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/4				R-1 ITEM NOMENCLATURE SHIP CONCEPT ADVANCED DESIGN, PE 0603563N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	5.031	20.665	5.820	8.054	7.909	2.036	2.029	Continuing	Continuing
Design Tools, Plans & Concepts / S2196	0.208	1.932	5.820	8.054	7.909	2.036	2.029	Continuing	Continuing
Human Integration Information System/S2862	4.823	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.823
Small Combatant Craft/S9041	0.000	8.326	0.000	0.000	0.000	0.000	0.000	0.000	8.326
Sealion Tech Demo/S9042	0.000	0.991	0.000	0.000	0.000	0.000	0.000	0.000	0.991
Metallic Materials Adv Dev & Certification/S9043	0.000	3.370	0.000	0.000	0.000	0.000	0.000	0.000	3.370
DocumentAutomation Of ICAS Maint/S9044	0.000	2.577	0.000	0.000	0.000	0.000	0.000	0.000	2.577
Planning and Design LHD-Type Ship/S9045	0.000	3.469	0.000	0.000	0.000	0.000	0.000	0.000	3.469
Quantity of RDT&E Articles	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<p>A. (U) Mission Description and Budget Item Justification:</p> <p>The mission of the PE is to explore alternative surface ship force structures, the advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures and the advanced concepts in support pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is 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 & unmmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.</p> <p>(U) Project S2196 - This project funds concept develop engineering, mission effectiveness analysis, and other analysisfor formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.</p> <p>(U) Project S2862 - Thisproject funds Human Systems Integration development for an Automated Maintenance Environment (AME) for surface ships. AME for surface ships was a Congressional add project in FY 2000 in this PE. (Congressional adds)</p> <p>(U) Project S9041 - This project funds only acquisition, test and evaluation of a high speed variable freeboard planning craft and related special warfare high speed support craft and equipment.</p> <p>(U) Project S9042 - This project funds Situation Awareness Module.</p>									

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																												
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/4	R-1 ITEM NOMENCLATURE SHIP CONCEPT ADVANCED DESIGN, PE 0603563N																													
<p>(U) Project S9043 - This project funds the Metellic Material Advanced Development and Certification Program.</p> <p>(U) Project S9044 - This project funds Documentation Automation of Integrated Condition Assessment System (ICAS) Maintenance and other Navy pcedures in XML format.</p> <p>(U) Project S9045 - This project funds Planning and Design of LHD-type ship.</p>																														
<p>B. Program Change Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">FY 2001</th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: right;">0.162</td> <td style="text-align: right;">1.949</td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: right;">5.162</td> <td style="text-align: right;">20.849</td> <td style="text-align: right;">0.000</td> </tr> <tr> <td>(U) Adjustments to FY 2002/2003</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Appropriated Value/FY 2002</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">President's Budget:</td> <td style="text-align: right;"><u>4.869</u></td> <td style="text-align: right;"><u>18.716</u></td> <td style="text-align: right;"><u>3.843</u></td> </tr> <tr> <td>(U) FY 2003 Pres Budget Submit:</td> <td style="text-align: right;">5.031</td> <td style="text-align: right;">20.665</td> <td style="text-align: right;">3.843</td> </tr> </tbody> </table> <p>(U) Funding: FY 2001: Human Integration Information System (+\$5.000M), and FY01 SBIR Apr-27-01 (-\$.131M) . FY 2002: Congressional plus ups - Small Combatant Craft (+\$8.400M), Sealion Tech Demo (+\$1.000M), Metallic Materials Adv Dev (+\$3.400M), Document Automation Of ICAS (+2.6M) and Planning & Design LHD-Type Ship (+\$3.500M) and minor adjustments (-\$.184). FY 2003: FY 2003 realign shipbuilding R&D funds for future force formulation (+\$4.000M)and minor adjustment (-\$.157M).</p> <p>(U) Schedule: None</p> <p>(U) Technical: The advanced concept studies efforts have been expanded to include alternative surface ship force studies.</p>				FY 2001	FY 2002	FY 2003	(U) FY 2002 President's Budget:	0.162	1.949		(U) Appropriated Value:	5.162	20.849	0.000	(U) Adjustments to FY 2002/2003				Appropriated Value/FY 2002				President's Budget:	<u>4.869</u>	<u>18.716</u>	<u>3.843</u>	(U) FY 2003 Pres Budget Submit:	5.031	20.665	3.843
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s (-\$.184).
\$4.000M)and minor adjustment (-\$.157M).

: surface ship force studies.

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4				PROJECT NAME AND NUMBER DESIGN TOOLS, PLANS & CONCEPTS / S2196					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2005	FY 2006	Cost to Complete	Total Cost
Project Cost (S2196)	0.208	1.932	5.820	8.054	7.909	2.036	2.029	Continuing	Continuing
RDT&E Articles Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
<p>A. (U) Mission Description and Budget Item Justification: This project develops and explores alternative surface ship force structures, the advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures and the advanced concepts in support pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is 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 & unmmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.</p> <p>(U) This project provides the foundation for 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 efforts for all potential surface ships. These efforts are the required first step in the integration of total ship systems, including combat systems and hull, mechanical and electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design/construction and operational problems. A more subtle and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and our greatest potential ship design advances never realized. Designs and technologies must meet the threat. This project supports this requirement.</p> <p>(U) This project funds concept develop engineering, mission effectiveness analysis, and other analysis for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.</p> <p>(U) 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 alternatives 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 Mission Need Statements (MNS) 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 foundational to the Navy's formulation of the future fleet.</p> <p>(U) Efforts under Project S2196 transition directly to early stage ship design in PE 0603564N, Ship Preliminary Design and Feasibility Studies. 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.</p>									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4	PROGRAM ELEMENT NAME AND NUMBER SHIP CONCEPT ADVANCED DESIGN, PE 0603563N	PROJECT NAME AND NUMBER DESIGN TOOLS, PLANS & CONCEPTS / S2196
<p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <p>(U) (\$0.208) Ship Concept Design and Engineering Tools, Methods, and Criteria. Improved capability for rapid and accurate ship tradeoff studies using surface ship synthesis/assessment model. Developed plan for enhancements to Advanced Surface Ship Evaluation Tool (ASSET). Supported NAVSEA Professor of Ship Production research grant.</p> <p>2. (U) FY 2002 PLAN:</p> <p>(U) (\$0.454) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship configuration, capabilities and rough order of magnitude (ROM) ship costs. Conduct pre-Milestone A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess the future ship concepts as part of potential future fleet architecture concepts.</p> <p>(U) (\$0.195) Total Ship Technology Assessment: Analyze the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identify, characterize and assess new and emergent technologies. Develop methodologies for assessment of benefits and impacts of technologies in total ship concepts. Support development of total ship and HM&E technology roadmaps.</p> <p>(U) (\$1.283) Ship Concept Design and Engineering Tools, Methods, and Criteria. Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the Navy's Advanced Surface Ship Evaluation Tool (ASSET) surface ship synthesis/assessment models in the following areas: improve performance assessment capabilities, update and enhance capability to handle new ship configurations, hull form alternatives, signature reduction features, characterize advanced machinery technologies, address optimal required shipboard manning, reduced total ownership cost, and increased capabilities to determine ship size impacts of new technologies. Improve interoperability of Navy and shipbuilder design systems. Continue development of interoperability standards and capability between and among: synthesis/assessment models, cost estimation models, operational effectiveness models, shipbuilder computer aided design (CAD) models, and Navy developed analysis tools by participation in collaborative efforts such as the Navy Industry Digital Data Exchange Standards Committee (NIDDESC) and other shipbuilding technology efforts. Support NAVSEA Professor of Ship Production research grant.</p>		

R-1 SHOPPING LIST - Item No. 60 - 4 of 60 - 8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6)

UNCLASSIFIED

capability for rapid and accurate ship tradeoff studies using surface ship synthesis/assessment models. Awarded NAVSEA Professor of Ship Production research grant.

Perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, weight, and A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess

Ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identify, characterize and assess impacts of technologies in total ship concepts. Support development of total ship and HM&E technology

Ability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the US models in the following areas: improve performance assessment capabilities, update and enhance capabilities to characterize advanced machinery technologies, address optimal required shipboard manning, reduced total weight, Improve interoperability of Navy and shipbuilder design systems. Continue development of interoperability models, operational effectiveness models, shipbuilder computer aided design (CAD) models, and Navy-Digital Data Exchange Standards Committee (NIDDESC) and other shipbuilding technology efforts. Support

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4	PROGRAM ELEMENT NAME AND NUMBER SHIP CONCEPT ADVANCED DESIGN, PE 0603563N	PROJECT NAME AND NUMBER DESIGN TOOLS, PLANS & CONCEPTS / S2196
<p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS (CONTINUED):</p> <p>3. (U) FY 2003 PLAN:</p> <p>(U) (\$1.460) Future Force Structure Concepts and Mission Capabilities Effectiveness: In support of Navy force transformation develop alternative surface ship force structure concepts including ships and unmanned vehicles. Evaluate the mission capability effectiveness and costs for these alternatives surface fleet architectures. Perform fleet warfighting / mission effectiveness assessment studies.</p> <p>(U) (\$0.979) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship s configuration, capabilities and rough order of magnitude (ROM) ship costs. Conduct pre-Milestone A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess the future ship concepts as part of potential future fleet architecture concepts.</p> <p>(U) (\$0.490) Total Ship Technology Assessment: Analyze the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identify, characterize and assess new and emergent technologies. Develop techniques to improve the integration and transition of new technologies in total ship concepts. Update and revise total ship and HM&E technology roadmaps.</p> <p>(U) (\$1.460) Future Force Formulation Concept and Evaluation Tools, Methods, and Criteria: Develop Force Architecture & Force Concept Synthesis Models, Fleet Architecture Assessment Performance Analysis Tools, update the Naval Fleet Affordability Model (NFAM) & link in with other Cost Models and cost databases to support force level cost studies. Develop links to War Game Models / Warfighting & Mission Effectiveness Assessment Models.</p> <p>(U) (\$1.431) Ship Concept Design and Engineering Tools, Methods, and Criteria. Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the Navy's Advanced Surface Ship Evaluation Tool (ASSET) surface ship synthesis/assessment models in the following areas: provide an integrated design environment that supports the multi-disciplinary analysis of design and technology alternatives; expand the existing monohull design capabilities to support the projected trend in future naval vessels to higher speed, smaller, and potentially multi-platforms; use of component architecture for software development and ship design; more effective use of object-based ship product models; improve integration with other naval ship analysis tools and commercial design and analysis software; provide more effective visualization and access to the virtual ship and its related product model data; and allow for the exploitation of software technology developed for the Web-based applications. Improve interoperability of Navy and shipbuilder design systems. Continue development of interoperability standards and capability between and among synthesis/assessment models, cost estimation models, operational effectiveness models, shipbuilder computer aided design (CAD) models, and Navy-developed analysis tools by participation in collaborative efforts such as the Navy Industry Digital Data Exchange Standards Committee (NIDDESC) and other shipbuilding technology efforts. Support NAVSEA Professor of Ship Production research grant.</p> <p>B. Other Program Funding Summary: Not applicable.</p> <p>(U) Related RDT&E</p> <div><div>(U) PE 0603513N (Shipboard Systems Component Development) (U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)</div><div>(U) PE 0603512N (Carrier Systems Development) (U) PE 0604300N (SC21 Total Ship Systems Engineering) (U) PE 0604567N (Ship Contract Design/Live Fire T&E)</div></div>		

R-1 SHOPPING LIST - Item No. 60 -5 of 60 - 8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6)

UNCLASSIFIED

Support of Navy force transformation develop alternative surface ship force structure concepts including the base alternatives surface fleet architectures. Perform fleet warfighting / mission effectiveness assessment

Perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, and A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess

ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identify, characterize and assess new technologies in total ship concepts. Update and revise total ship and HM&E technology roadmaps.

via: Develop Force Architecture & Force Concept Synthesis Models, Fleet Architecture Assessment & other Cost Models and cost databases to support force level cost studies. Develop links to War Gaming

Ability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the US models in the following areas: provide an integrated design environment that supports the multi-discipline efforts to support the projected trend in future naval vessels to higher speed, smaller, and potentially multi-hull effective use of object-based ship product models; improve integration with other naval ship analysis tools and the virtual ship and its related product model data; and allow for the exploitation of software technologies design systems. Continue development of interoperability standards and capability between and among: shipbuilder computer aided design (CAD) models, and Navy-developed analysis tools by participation in DESC) and other shipbuilding technology efforts. Support NAVSEA Professor of Ship Production research

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																																									
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4	PROGRAM ELEMENT NAME AND NUMBER SHIP CONCEPT ADVANCED DESIGN, PE 0603563N	PROJECT NAME AND NUMBER DESIGN TOOLS, PLANS & CONCEPTS / S2196																																									
<p>C. Acquisition Strategy: This is a non acquisition program that develops, evaluates, and validates early stage 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 these concept designs and assessments.</p> <p>D. Schedule Profile</p> <table border="1"> <thead> <tr> <th></th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> </tr> </thead> <tbody> <tr> <td>Program Milestones</td> <td>(Not applicable - Non-Acquisition Program)</td> <td></td> <td></td> </tr> <tr> <td rowspan="8">Engineering Milestones (All are 4th Quarter unless otherwise indicated)</td> <td>ASSET ship synthesis model tool user interface upgrade</td> <td>Pre-MS A Ship Concept Studies for FY 2002</td> <td>Pre-MS A Ship Concept Studies for FY 2003</td> </tr> <tr> <td>Publish Load Factor Resistance Design Method Application and Basis</td> <td>Ship synthesis model tool interface to major operational assessment tool</td> <td>Ship synthesis model tool interface to performance assessment tools</td> </tr> <tr> <td>Plan for Enhancements to ASSET Ship Synthesis Model</td> <td>Merge modeling & analysis capabilities for of alternative ship synthesis model tools</td> <td>Initial capability to assess alternative & advanced hull forms in ASSET ship synthesis model</td> </tr> <tr> <td></td> <td>Enhanced ship auxiliary systems & machinery modules for ASSET ship synthesis model</td> <td>Enhanced ship weight, area & volume capabilities by using surface modeling in ASSET ship synthesis model</td> </tr> <tr> <td></td> <td>Initial method for assessment of technology benefits - impacts</td> <td>Link of ASSET & cost models to support assessment of technology benefits - Impacts</td> </tr> <tr> <td></td> <td></td> <td>Surface Ship Force Structure Alternatives and Architecture Study</td> </tr> <tr> <td></td> <td></td> <td>Prototype Force Architecture Concept Development Model</td> </tr> <tr> <td></td> <td></td> <td>Prototype Force Mission Effectiveness Tool</td> </tr> <tr> <td>Testing Milestones</td> <td>(Not applicable - Non-Acquisition Program)</td> <td></td> <td></td> </tr> <tr> <td>Contract Milestones</td> <td>(Not applicable - Non-Acquisition Program)</td> <td></td> <td></td> </tr> </tbody> </table>				FY 2001	FY 2002	FY 2003	Program Milestones	(Not applicable - Non-Acquisition Program)			Engineering Milestones (All are 4th Quarter unless otherwise indicated)	ASSET ship synthesis model tool user interface upgrade	Pre-MS A Ship Concept Studies for FY 2002	Pre-MS A Ship Concept Studies for FY 2003	Publish Load Factor Resistance Design Method Application and Basis	Ship synthesis model tool interface to major operational assessment tool	Ship synthesis model tool interface to performance assessment tools	Plan for Enhancements to ASSET Ship Synthesis Model	Merge modeling & analysis capabilities for of alternative ship synthesis model tools	Initial capability to assess alternative & advanced hull forms in ASSET ship synthesis model		Enhanced ship auxiliary systems & machinery modules for ASSET ship synthesis model	Enhanced ship weight, area & volume capabilities by using surface modeling in ASSET ship synthesis model		Initial method for assessment of technology benefits - impacts	Link of ASSET & cost models to support assessment of technology benefits - Impacts			Surface Ship Force Structure Alternatives and Architecture Study			Prototype Force Architecture Concept Development Model			Prototype Force Mission Effectiveness Tool	Testing Milestones	(Not applicable - Non-Acquisition Program)			Contract Milestones	(Not applicable - Non-Acquisition Program)		
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	Publish Load Factor Resistance Design Method Application and Basis	Ship synthesis model tool interface to major operational assessment tool	Ship synthesis model tool interface to performance assessment tools																																								
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Contract Milestones	(Not applicable - Non-Acquisition Program)																																										

R-1 SHOPPING LIST - Item No. 60 - 6 of 60 - 8

Exhibit R-2a, RDT&E Project J
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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E,N/4			SHIP CONCEPT ADVANCED DESIGN, PE 0603563N			DESIGN TOOLS, PLANS, AND CONCEPTS, S2196						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering, Concept Development, Engineering Development, Demonstration & Evaluation	various	Other Various Contractors	53.855	0.000	various	0.000	various	0.975	various	N/A	Cont.	N/A
	WR	NAVSEA, Dahlgren Div, Dahlgren, VA		0.000	N/A	0.000	N/A	1.559	N/A	N/A	N/A	N/A
	WR	NAVSEA, Carderock Div, West Bethesda, MD	27.348	0.148	N/A	1.780	N/A	2.436	N/A	N/A	N/A	N/A
	WR & RC	Other Govt. Activities	8.422	0.060	N/A	0.143	N/A	0.834	N/A	N/A	N/A	N/A
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			89.625	0.208		1.923		5.804		Cont.	Cont.	
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		N/A	N/A	
Remarks:												

R-1 SHOPPING LIST - Item No. 60 - 7 of 60 - 8

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER						
RDT&E,N/4			SHIP CONCEPT ADVANCED DESIGN, PE 0603563N				DESIGN TOOLS, PLANS, AND CONCEPTS, S2196						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation											0.000		
Operational Test & Evaluation											0.000		
Tooling											0.000		
GFE											0.000		
Subtotal T&E			0.000	0.000	N/A	0.000	N/A	0.000	N/A	N/A	N/A		
Remarks:													
Contractor Engineering Support											0.000		
Government Engineering Support											0.000		
Program Management Support											0.000		
Travel				0.000		0.009		0.016			N/A		
Labor (Research Personnel)											0.000		
Overhead											0.000		
Subtotal Management			0.000	0.000	N/A	0.009	N/A	0.016	N/A	N/A	N/A		
Remarks:													
Total Cost			89.625	0.208		1.932		5.820		Cont.	Cont.		
Remarks:													

R-1 SHOPPING LIST - Item No. 60 - 8 of 60 - 8

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 8)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/4				SHIP PRELIMINARY DESIGN AND FEASIBILITY STUDIES / PE 0603564N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	54.449	14.748	2.983	4.975	10.921	14.867	17.812	Continuing	Continuing
Ship Feasibility Studies/S0408	35.155	14.748	2.983	4.975	10.921	14.867	17.812	Continuing	Continuing
Shipboard Simulation for USMC/22863	19.294	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.294
Quantity of RDT&E Articles	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
A. (U) Mission Description and Budget Item Justification. Ship concepts, identified in PE 0603563N (Ship Concept Advanced Design) are transitioned to and further developed by this project after an approved Mission Needs Statement (MNS) and usually after an approved Milestone A (MS A) decision. This project performs the Ship Feasibility Studies required to address a specific Mission Needs Statement (MNS) and supports the Analysis of Alternatives (AOA) for new surface ships in the Navy Shipbuilding Plan. Under Acquisition Reform for new ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process. This project performs impact studies of warfare, hull, mechanical and electrical subsystems on advanced ship designs; enhances ship/ship system design methodologies that support feasibility studies; develops and upgrades the engineering tools, especially ship synthesis models, used to support AOA studies and other engineering efforts accomplished during the feasibility study phase; evaluates advanced and alternative technologies and develops total ship concepts with these technologies to assess their suitability; develops the initial documentation and design methodology required by the government for the design of surface ships in the Shipbuilding Program in accordance with the requirements of the new DoD 5000.2 Instruction; supports the development of the Operational Requirements Document (ORD) and other documentation required at Program Initiation and accomplishes other efforts for future ship acquisitions in support of a Program Initiation. 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 Contract Design phase under PE0604567N.									
B. (U) Description of Shipboard Simulation for Marine Corps Operations. Models and simulations of USMC operations and support are to be demonstrated and further developed as required by this project. This project will ensure interoperability between select amphibious ships and the embarked USMC forces in support of expeditionary warfare operations. Interoperability will be demonstrated through the use of modeling and simulation technology for pre-assault mission planning and rehearsals, just-in-time, embedded technical and tactical training of USMC forces afloat, cargo and munitions load out planning, cross-ARG, real time cargo visibility, survivability analysis and maritime logistics planning in support of Operational Maneuver From The Sea. Models will also enable operational planning for special operations such as humanitarian assistance and NEO missions. The use of modeling and simulation technology enables the avoidance of more costly and time consuming operational testing and evaluation. The objective is to maximize compatibility and interoperability between amphibious ships and USMC forces, and to maximize mission flexibility across various warfare areas.									

R-1 SHOPPING LIST - Item No. 61-1 of 61-5

Exhibit R-2, RDT&E Budget Item Justification
 (Exhibit R-2, page 1 of 5)

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/4		R-1 ITEM NOMENCLATURE SHIP PRELIMINARY DESIGN AND FEASIBILITY STUDIES / PE 0603564N	
B. Program Change Summary			
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
(U) FY 2002 President's Budget:	56.374	14.922	0.000
(U) Appropriated Value	56.896	14.922	0.000
(U) Adjustment to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:	<u>-2.447</u>	<u>-0.174</u>	<u>2.983</u>
(U) FY 2003 Pres Budget Submit	54.449	14.748	2.983
<p>-(U) Funding: FY 2001 Adjustments: Shipboard Simulator for USMC (+\$20.000M), JCC(X) Analysis of Alternatives (-\$10.000M); - \$0.398M 7% Pro-Rate reduction; -\$0.124M Government Wide Recission and (-\$ 1.060M) SBIR Apr-27-01 reduciton, (-\$0.723M) deferral and (-\$0.142M) for minor adjustments. FY 2002 Adjustments: Minor adjustments (-\$0.174M) . FY 2003 Adjustments: High Speed Vessel Studies (\$3.000M), and minor adjustments (-\$.017M).</p> <p>- (U) Schedule: None</p> <p>- (U) Technical: None</p>			

R-1 SHOPPING LIST - Item No. 61-2 of 61-5

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 5)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER			R-1 ITEM NOMENCLATURE					
RDT& E, NAVY/BA4	SHIP PRELIMINARY DESIGN/FEASIBILITY STUDIES			SHIP DEVELOPMENT (ADV) / S0408					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	35.155	14.748	2.983	4.975	10.921	14.867	17.812	Continuing	Continuing
Quantity of RDT&E Articles	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
A. (U) Mission Description and Budget Item Justification. Ship concepts, identified in PE 0603563N (Ship Concept Advanced Design) are transitioned to and further developed by this project after an approved Mission Needs Statement (MNS) and usually after an approved Milestone A (MS A) decision. This project performs the Ship Feasibility Studies required to address a specific Mission Needs Statement (MNS) and supports the Analysis of Alternatives(AOA) for new surface ships in the Navy Shipbuilding Plan. Under Acquisition Reform for new ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process. This project performs impact studies of warfare, hull, mechanical and electrical subsystems on advanced ship designs; enhances ship/ship system design methodologies that support feasibility studies; develops and upgrades the engineering tools, especially ship synthesis models, used to support AOA studies and other engineering efforts accomplished during the feasibility study phase; evaluates advanced and alternative technologies and develops total ship concepts with these technologies to assess their suitability; develops the initial documentation and design methodology required by the government for the design of surface ships in the Shipbuilding Program in accordance with the requirements of the new DoD 5000.2 Instruction; supports the development of the Operational Requirements Document (ORD) and other documentation required at Program Initiation and accomplishes other efforts for future ship acquisitions in support of a Program Initiation. 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 Contract Design phase under PE0604567N.									

R-1 SHOPPING LIST - Item No. 61-1 of 61-5

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 5)

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT& E, NAVY/BA4	PROGRAM ELEMENT NAME AND NUMBER SHIP PRELIMINARY DESIGN/FEASIBILITY STUDIES	R-1 ITEM NOMENCLATURE SHIP DEVELOPMENT (ADV) / S0408
<p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <p>(U) (\$19.993) Continued JCC(X) Feasibility Studies, AOA, ORD development and mission package and host platform definition. Funded JCC(X) requirements development process. Prepared documentation required for a Program Initiation decision.</p> <p>(U) (\$15.162) Began pre-Program Initiation AOA, feasibility studies, and ORD Development for LHA Replacement ships.</p> <p>2. (U) FY 2002 PLAN:</p> <p>(U) (\$9.868) Continue and complete JCC(X) Feasibility Studies, ORD development and mission package and host platform definition. Fund limited industry participation in JCC(X) requirements development process. Prepare documentation required for a Program Initiation decision.</p> <p>(U) (\$4.880) Continue and complete LHA Replacement Feasibility Studies. Prepare documentation required for a Program Initiation decision.</p> <p>3. (U) FY 2003 PLAN:</p> <p>(U) (\$ 2.983) Begin Pre-Program Initiation Studies for Navy High Speed Vessel (HSV) in support of the Navy force transformation process. To achieve rapid transformation, new joint battle force architectures, advanced ship concepts, technology development and operational demonstrations are required. Resources will be used for a robust Navy After Next (NAN) force architecture development effort that will support the study, analysis and testing of alternative, innovative force structure concepts, including advanced hull, machinery and payload concepts. The development and validation of concept and analysis tools will be done with these resources to support the Navy's short and long term future force strategic plan in a joint battle force context.</p>		

R-1 SHOPPING LIST - Item No. 61-2 of 61-5

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 5)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Budget Item Justification		DATE: February 2002								
APPROPRIATION/BUDGET ACTIVITY RDT& E, NAVY/BA4	PROGRAM ELEMENT NAME AND NUMBER SHIP PRELIMINARY DESIGN/FEASIBILITY STUDIES	R-1 ITEM NOMENCLATURE SHIP DEVELOPMENT (ADV) / S0408								
<p>C. (U) Other Program Funding Summary: Not applicable.</p> <p>(U) Related RDT&E: (U) PE 0603563N (Ship Concept Advanced Design) (U) PE 0604567N (Ship Contract Design/Live Fire T&E)</p> <p>D. (U) Acquisition Strategy: Not applicable. This is a non acquisition program that supports pre-Milestone I efforts for potential ship acquisition programs.</p> <p>E. (U) Schedule Profile:</p> <table><tr><td>Program Milestones</td><td>FY 2001</td><td>FY 2002</td><td>FY2003</td></tr><tr><td></td><td>4Q LHA Replacement MS A</td><td>3Q JCC(X) Program Initiation</td><td></td></tr></table> <p>Engineering Milestones TBD - Milestone schedule is established at Program Initiation.</p> <p>T&E Milestones See individual ship acquisition program documentation.</p> <p>Contract Milestones See Individual ship acquisition program documentation.</p>			Program Milestones	FY 2001	FY 2002	FY2003		4Q LHA Replacement MS A	3Q JCC(X) Program Initiation	
Program Milestones	FY 2001	FY 2002	FY2003							
	4Q LHA Replacement MS A	3Q JCC(X) Program Initiation								

R-1 SHOPPING LIST - Item No. 61-3 of 61-5

Exhibit R-2, RDT&E Project Justification
(Exhibit R-2, page 3 of 5)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E,N/4			Ship Prelim Design & Feasibility Studies/0603564N			Ship Development (ADV)/S0408						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 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 Dahlgren, VA	9.592	1.780		0.700	Various			Cont.	Cont.	N/A
	WR	NSWC Carderock, MD	1.480	6.383	Various	1.425	Various			Cont.	Cont.	N/A
	WR	NSWC Panama City	0.000	1.300	Various					Cont.	Cont.	N/A
	WR	NAVAIR	0.000	0.800	Various	0.300	Various			Cont.	Cont.	N/A
	PD	SPAWAR	3.030	5.321	Various	2.000	Various			Cont.	Cont.	N/A
	WR/Reqn	Other Government	10.558	1.615	Various			1.5	Various	Cont.	Cont.	N/A
	C/CPFF	Nichols Adv Marine, VA	2.280	9.975	Various	3.125	Various			Cont.	Cont.	N/A
	Comp	J.J. McMullen, VA	5.857	0.327	Various					Cont.	Cont.	N/A
	Various	Other Contractor	19.165	7.594	Various	7.173	Various	1.463	Various	Cont.	Cont.	N/A
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			51.962	35.095		14.723		2.963		Cont.	Cont.	N/A
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	
Remarks:												

R-1 SHOPPING LIST - Item No. 61-4 of 61-5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 4 of 5)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER					
RDT&E,N/4			Ship Prelim Design & Feasibility Studies/0603564N				Ship Development (ADV)/S0408					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.060		0.025		0.020		Cont.	Cont.	N/A
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.060		0.025		0.020		Cont.	Cont.	N/A
Remarks:												
Total Cost			51.962	35.155		14.748		2.983		Cont.	Cont.	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 61-5 of 61-5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 5)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4				R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	9.226	3.886	2.931	1.533	0.000	0.000	0.000	0.000	382.510
Advanced Surface Machinery/S1314	5.342	3.886	2.931	1.533	0.000	0.000	0.000	0.000	378.626
Naval Ship Survivability/32761	3.884	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.884
Quantity of RDT&E Articles									
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Advanced Surface Machinery Programs develop affordable advanced machinery and subsystems for surface ship propulsion, electric and auxiliary requirements.</p> <p>(U) Project S1314- The ICR Gas Turbine Engine program, is a marine propulsion gas turbine. ICR will reduce life cycle fuel cost and provide an alternate prime mover candidate. A contract for ICR Advanced Development (AD) with an option for Full Scale Development was awarded to Westinghouse Electric Corporation (now Northrop Grumman Marine Systems) in December 1991. The ICR is derived from the Rolls-Royce RB211 aircraft engine and through the introduction of an intercooler, recuperator, and variable area nozzles achieves approximately a 25% to 27% propulsion annual fuel savings when compared to the LM2500 on a mechanical drive ship.</p> <p>(U) Project 32761 - The funding will be used to demonstrate advanced open system architectures and controls to further improve electrical power reliability to mission critical loads and further reduce platform costs.</p>									

R-1 SHOPPING LIST - Item No. 63-1 of 63-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 7)

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																				
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA4	R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY																					
<p>B. (U) PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 15%; text-align: center;"><u>FY 2001</u></th> <th style="width: 15%; text-align: center;"><u>FY 2002</u></th> <th style="width: 20%; text-align: center;"><u>FY 2003</u></th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: center;">9.547</td> <td style="text-align: center;">3.921</td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: center;">9.635</td> <td style="text-align: center;">3.921</td> <td></td> </tr> <tr> <td>(U) Adjustment to FY 2001/2002 Appropriated value/ FY 2002 President's Budget:</td> <td style="text-align: center;"><u>-0.321</u></td> <td style="text-align: center;"><u>-0.035</u></td> <td></td> </tr> <tr> <td>(U) FY 2003 Pres Budget Submit:</td> <td style="text-align: center;">9.226</td> <td style="text-align: center;">3.886</td> <td style="text-align: center;">2.931</td> </tr> </tbody> </table> <p>(U) Funding: FY2001: Adjustments: FY 01 SBIR (-\$.197M), ASN RDA BTR (-\$.110M) and Minor adjustments (-\$.014M).</p> <p style="padding-left: 40px;">FY 2002: Adjustments: Minor adjustment (-\$.035M).</p> <p>(U) Schedule: ICR - No change. IPS program transitioned to P.E. 0603513N/Project 32471 in FY 2000.</p> <p>(U) Technical: IPS program transitioned to P.E. 0603513N/Project 32471 in FY 2000. In FY 2000, the ICR program transitioned the qualification portion of program to Allied countries for completion.</p> <p>C. (U) OTHER PROGRAM FUNDING SUMMARY: N/A</p>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	(U) FY 2002 President's Budget:	9.547	3.921		(U) Appropriated Value:	9.635	3.921		(U) Adjustment to FY 2001/2002 Appropriated value/ FY 2002 President's Budget:	<u>-0.321</u>	<u>-0.035</u>		(U) FY 2003 Pres Budget Submit:	9.226	3.886	2.931
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>																			
(U) FY 2002 President's Budget:	9.547	3.921																				
(U) Appropriated Value:	9.635	3.921																				
(U) Adjustment to FY 2001/2002 Appropriated value/ FY 2002 President's Budget:	<u>-0.321</u>	<u>-0.035</u>																				
(U) FY 2003 Pres Budget Submit:	9.226	3.886	2.931																			

R-1 SHOPPING LIST - Item No. 63-2 of 63-7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 7)

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER ADVANCED SURFACE MACHINERY/PE 0603573N			PROJECT NAME AND NUMBER ICR-Gas Turbine Engine/S1314					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	5.342	3.886	2.931	1.533	0.000	0.000	0.000	0.000	378.626
RDT&E Articles Qty									
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ICR Gas Turbine Engine is a marine propulsion gas turbine. ICR will reduce life cycle fuel cost and provide an alternate prime mover candidate. A contract for ICR Advanced Development (AD) with an option for Full Scale Development was awarded to Westinghouse Electric Corporation in December 1991. The ICR is derived from the Rolls-Royce RB211 aircraft engine and through the introduction of an intercooler, recuperator, and variable area nozzles achieves approximately a 25% to 27% propulsion annual fuel savings when compared to the LM2500 on a mechanical drive ship.</p> <p>(U) ICR full scale system development testing began in July 1994 and completed at Pyestock, U.K. on 30 April 1999. An additional 457 hours of testing at NAVSSES Philadelphia which completed 16 December 1999, confirmed readiness for qualification testing. Recuperator recovery efforts continued following the failure in January 1995 of the initial recuperator. An Engineering Development Model (EDM) recuperator, which is the exhaust heat recovery unit that provides most of the fuel efficiency gains, was delivered to the test site in January 1999. Testing on this EDM has met expectations. System testing to date has completed over 2400 hours of successful testing including over 1150 hours with the second generation recuperator and 1250 hours with the EDM recuperator. Tests to date have met objectives.</p> <p>(U) A Cooperative Agreement between the United Kingdom (U.K.) and United States governments was signed by USD(A&T) on 21 June 1994 and revised in March 1997 and again in November 2000 for in-kind and cash contributions to the ICR program. A Cooperative Agreement between the French and United States governments was signed by ASN(RD&A) on 30 August 1995 and revised in October 2000 for in-kind and cash contributions to the ICR program.</p> <p>(U) The FY 1999 funds for Integrated Power Systems (IPS) were budgeted and executed under P.E. 0603573N/Project S1314. IPS funding has transitioned to P.E. 0603513N/Project 32471 for both budget and execution in FY 2000 and out.</p>									

R-1 SHOPPING LIST - Item No. 63-3 of 63-7

UNCLASSIFIED

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 7)

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4	PROGRAM ELEMENT NAME AND NUMBER ADVANCED SURFACE MACHINERY/PE 0603573N	PROJECT NAME AND NUMBER ICR-GAS TURBINE ENGINE/S1314

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

(U) (\$5.342) ICR: The Royal and French navies initiated the 3000 hour endurance qualification test, which will require approximately eighteen months. U.S. Navy responsibilities include participation in the Steering Committee, technical review, monitoring tests and accepting test results for compliance to U.S. Navy requirements. The U.S. Navy initiated closing the development testing portion of the contract with Northrop Grumman Marine Systems. Initiated power production studies assessing the application of ICR technology.

2. (U) FY 2002 PLAN:

(U) (\$3.886) ICR: The Royal and French navies will continue execution of the 3000 hour endurance qualification test and initiated a shock test. U.S. Navy responsibilities will include participation in the Steering Committee, technical review, monitoring tests and accepting test results for compliance to U.S. Navy requirements. Continue ICR technology application studies.

3. (U) FY 2003 PLAN:

(U) (\$2.931) ICR: The Royal and French navies will complete the shock test and post qualification test inspections.

B. (U) OTHER PROGRAM FUNDING SUMMARY: N/A

C. (U) ACQUISTION STRATEGY: ICR is a candidate system for DD-21.

R-1 SHOPPING LIST - Item No. 63-4 of 63-7

Exhibit R-2a, RDT&E Budget Item Justification
(Exhibit R-2a, page 4 of 7)

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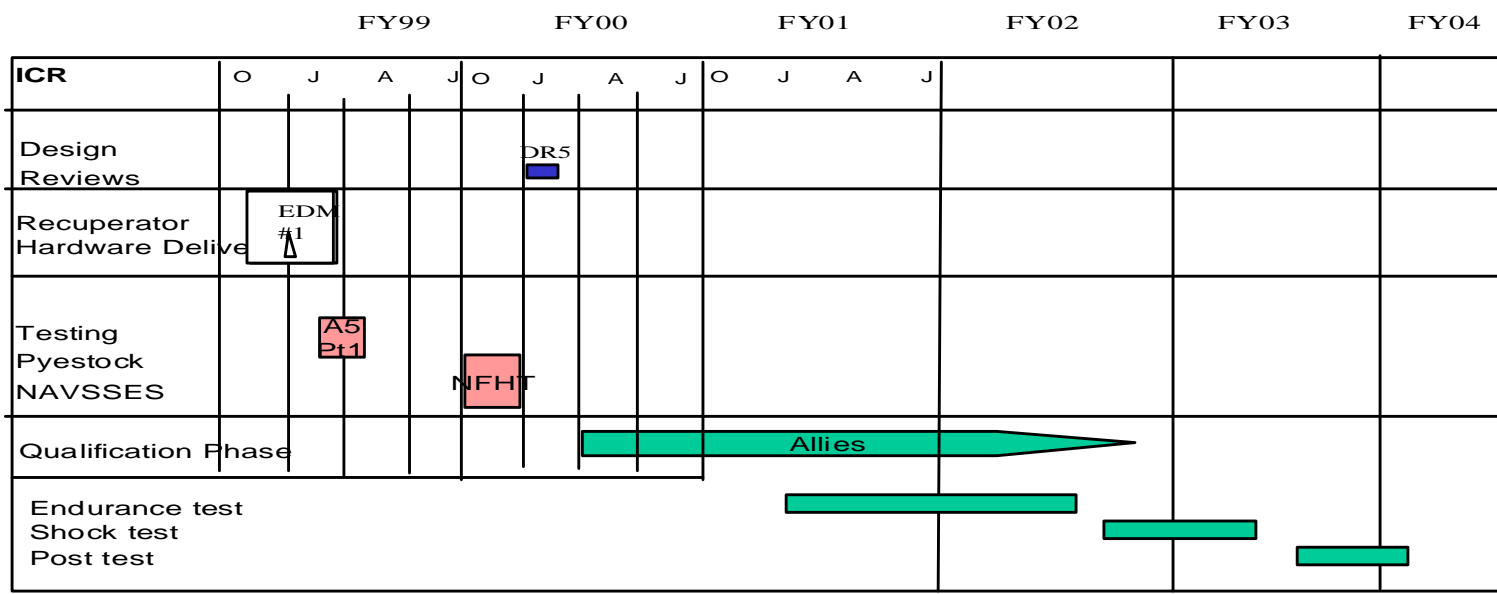
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EXHIBIT R-2a, RDT&E Project Justification			DATE:
			February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E,N/BA-4	ADVANCED SURFACE MACHINERY/0603573N	ICR-Gas Turbine Engine/S1314	

D. Schedule Profile:

ICR Essential Program



R-1 SHOPPING LIST - Item No. 63-5 of 63-7

Exhibit R-2a, RDT&E Budget Item Justification
(Exhibit R-2a, page 5 of 7)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA4			0603573N			ADVANCED SURFACE MACHINERY/S1314						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	NG, Sunnyvale, CA	335.014	3.842	Oct 00	1.500	Oct 01	0.600	Oct 02		340.956	
Ancillary Hardware Development											0.000	
Systems Engineering	C/CPAF	NG, Sunnyvale, CA								0.283	0.283	
	C/CPAF	Other Contractor	0.358	0.054	N/A	1.136	various	0.981	various	0.200	2.729	
Licenses											0.000	
Tooling											0.000	
Cost Improvement			7.000								7.000	
Award Fees	CC[AF	NG, Sunnyvale, CA	8.823							0.000	8.823	
Subtotal Product Development			351.195	3.896		2.636		1.581		0.483	359.791	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support												
Remarks:												

R-1 SHOPPING LIST - Item No. 63-6 of 63-7

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 7)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			0603573N			ADVANCED SURFACE MACHINERY/S1314						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Philadelphia, MD	13.739	1.400	Oct 00	1.200	Oct 01	1.300	Oct 02	1.000	18.639	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			13.739	1.400		1.200		1.300		1.000	18.639	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel				0.046	Various	0.050	Various	0.050	Various	0.050	0.196	
Labor (Research Personnel)												
Overhead												
Subtotal Management				0.046		0.050		0.050		0.050	0.196	
Remarks:												
Total Cost			364.934	5.342		3.886		2.931		1.533	378.626	
Remarks:												

R-1 SHOPPING LIST - Item No. 63-7 of 63-7

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 7)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA 4				R-1 ITEM NOMENCLATURE Combat Systems Integration/ Battle Force Interoperability 0603582N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY2007	Cost to Complete	Total Cost
Total PE Cost	57.211	61.368	40.464	43.955	43.323	43.740	44.113	Cont.	Cont.
Combat Systems Integration S0164/S2865/S2763	57.211	61.368	40.464	43.955	43.323	43.740	44.113	Cont.	Cont.
Quantity of RDT&E Articles	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<p>A. Mission Description and Budget Item Justification: COMNAVSEASYS COM (SEA 53) was assigned central responsibility for interoperability by CNO MSG DTG 021648Z May 1998 to develop policy and architecture for Battle Force warfare systems engineering, implement a common warfare systems engineering process and provide top level direction for fielding and support of balanced combat systems for ships and submarines. SEA 53 has responded with processes and tools to include: establishment of a force-level warfare systems engineering process, stewardship of the Fleet's deployment-minus-thirty months (D-30) configuration management and certification process per CINCLANTFLT/CINCPACFLT Inst. 4720.3A, and force-level interoperability assessment efforts using the Distributed Engineering Plant (DEP) land-based testing tool.</p> <p>This project funds shore based testing and Combat System Integration Testing (CSIT) certification of integrated combat direction, weapon, sensor, and computing systems prior to their installation in operational fleet units. The operational computer systems are assembled and tested to assure proper configuration and interoperability in a test environment similar to their ultimate shipboard operational environment. Included is operational assessment testing of the integrated suite of computer programs. To support the Battle Group Interoperability (BGI) program, this project funds: Battle Group (BG)/Battle Force (BF) requirements engineering and analysis. BG/BF configuration management through the D-30 process and updates to the Surface Combat System Master Plan (SSCSMP) and Battle Group and Battle Force interoperability testing (BGIT/BFIT) which is a prerequisite for operational Certification of the battle group configuration prior to deployment. BGIT/BFIT Certification of deploying Battle Group configurations in accomplished through the utilization of the Navy's Distributed Engineering Plant (DEP), which provides operational configurations for all combat system configurations located at multiple Navy 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 C4I configuration items prior to shipboard delivery for operational use in surface combatant platforms and battle group units.</p> <p>The program was directed to focus on and execute to it's minimum executable requirement for Anti Air Warfare (AAW) across mission requirements.</p>									

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA 4	R-1 ITEM NOMENCLATURE Combat Systems Integration/Battle Force Interoperability 0603582N	
<p>1. (U) FY 01 ACCOMPLISHMENTS:</p> <p>(U) (\$9.731) Conducted Combat System Integration Testing (CSIT) of Advanced Combat Direction System (ACDS) Block-0, Level 10.25, Block-1 upgrades, Command and Control Processor (C2P) upgrades, Cooperative Engagement Capability (CEC) Baseline-2, Ship Self Defense System (SSDS) MK-2, Mod 0 in CV/CVN, LHD, and LHA ship classes. Continued design and development of surface ship test beds to include networks for the CVN-76 and CV/LHD SSDS MK-2, Mod 1 backfit classes. Continued planning for out-year Combat System Integration Testing (CSIT), including Common Scenario/Common Environment (CSCE) Simulation, test bed and test procedures design and development. Continued SSCMP updates.</p> <p>(U) (\$15.828) Provided Distributed Engineering Plant (DEP) Testbed to support land based testing of complex computer program configurations for the battleforce. Conducted Battle Group Interoperability Testing (BGIT) for JOHN F. KENNEDY, JOHN C. STENNIS, THEODORE ROOSEVELT Battle Groups. Conducted Collaborative Systems Test (CST) for JOHN F. KENNEDY Battle Group in support of CEC OPEVAL. Conducted Interoperability Systems Engineering Tests (ISETs) for root cause determination of key interoperability trouble report observations.</p> <p>(U) (\$6.256) Continued execution of D-30 Process for all Battle Groups in the deployment cycle, including: BFAO efforts, BG Change Control Process, Land Based Triage, BG Capabilities and Limitations Report and Engineering assessments. Continued configuration management for all battle groups. Supported AMPS website and Electronic Configuration Control Board (ECCB).</p> <p>(U) (\$4.082) Continued Warfare Systems Engineering Requirements development. Conducted BG related systems engineering efforts to include Analysis of Alternatives (AOA). Continued to establish System Engineering Teams (SETs). Continued to develop Design Reference Mission (DRM) to communicate requirements in their operational context, and produce Warfare Area Layouts as integrated program plans for introducing new capability.</p> <p>(U) (\$19.332) Common Command and Decision (U) (\$14.015) Continued Design Engineering. (U) (\$2.389) Continued Acquisition Management Support. (U) (\$2.928) Continued Technical Management Support.</p> <p>(U) (\$1.982) Development of optically multiplexed wideband radar beamfinder.</p> <p>2. (U) FY02 PLAN:</p> <p>(U) (\$9.613) Conduct Combat System Integration Testing (CSIT) of Advanced Combat Direction System (ACDS) Block-0, level 10.24.X, ACDS Block-1 2.1.8, Combat Direction System (CDS) level 12.X/13.X in CV/CVN, LSD, and LHD ship classes, SSDS MK-2, Mod 0, and Command and Control Processor (C2P) upgrade. Continue planning for out-year Combat System Integration Testing (CSIT). Continue SSCMP updates.</p> <p>(U) (\$17.630) Provide Distributed Engineering Plant (DEP) Testbed to support land based testing of complex computer program configurations for the Battle Force. Conduct Battle Group Interoperability Testing (BGIT) for ABRAHAM LINCOLN, GEORGE WASHINGTON, KITTY HAWK, HARRY S. TRUMAN, NIMITZ, THEODORE ROOSEVELT, and CONSTELLATION Battle Groups. Conduct Interoperability Systems Engineering Tests (ISETs) for root cause determination of key interoperability trouble report observation.</p>		

R-1 SHOPPING LIST - Item No. 65-2 of 65-5

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 5)

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY		February 2002
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA 4	R-1 ITEM NOMENCLATURE	
	Combat Systems Integration/Battle Force Interoperability 0603582N	
<p>(U) (\$3.954) Continue Warfare Systems Engineering Requirements development to include testing and evaluation of new weapons technologies and incorporation of land-based test sites to support new technologies associated with accomplishing the objectives of a Single Integrated Air Picture (SIAP) such as directed energy technologies. Conduct BG related systems engineering efforts to include Analysis of Alternatives (AOA). Continue to develop Design Reference Mission (DRM) to communicate requirements in their operational context, and produce Warfare Area Layouts as integrated program plans for introducing new capability.</p> <p>(U) (\$4.943) Fund Navy participation in Joint Distributed Engineering Plant (JDEP).</p> <p>(U) (\$17.000) Common Command and Decision**. Per Congressional direction funds will be used for SBIR Phase III efforts to develop CC&D functions.</p> <p>**FY 02 Congressional plus-up of \$17M for Common Command and Decision/Program Element 0604518N incorrectly placed under Program Element 0603582N, CSI/BFI.</p> <p>(U) (\$2,000) Development of Optically Multiplexed Wideband Radar Beamfinder</p> <p>(U) FY03 PLAN:</p> <p>(U) (\$9.417) Conduct Combat System Integration Testing (CSIT) of Advanced Combat Direction (ACDS)Block-0, level 10.24.X, ACDS Block-1 2.1.Xin CV/LHD/LHA ship classes, Combat Direction System (CDS) level 12, and Ship Wide Area Network (SWAN). Continue planning for out-year Combat System Integration Testing (CSIT). Continue SSCMP updates.</p> <p>(U) (\$16.076) Provide Distributed Engineering Plant (DEP) testbed to support land-based testing of complex computer program configurations for the Battle Force. Conduct Battle Force Interoperability Testing (BFIT) for ENTERPRISE, CARL VINSON, GEORGE WASHINGTON, HARRY S. TRUMAN, JOHN C. STENNIS Battle Groups.</p> <p>(U) (\$5.775) Continue execution of D-30 Process for all Battle Groups in the deployment cycle, including: BFAO efforts, BG Change Control Process, Land-Based Triage, and BG Capabilities and Limitations reports. Continue configuration management for all Battle Groups. Support AMPS website and Electronic Configuration Control Board (ECCB).</p> <p>(U) (\$3.576) Continue Warfare Systems Engineering Requirements development to include testing and evaluation of new weapons technologies and incorporation of land-based test sites to support new technologies associated with accomplishing the objectives of a Single Integrated Air Picture (SIAP) such as directed energy technologies.</p>		

R-1 SHOPPING LIST - Item No. 65-3 of 65-5

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 3 of 5)

UNCLASSIFIED

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA 4	R-1 ITEM NOMENCLATURE Combat Systems Integration/Battle Force Interoperability 0603582N	
B. Program Change Summary:		
	FY2001	FY2002
FY 2002 President's Budget:	54.461	42.915
Appropriated Value:	54.966	42.915
Adjustments to FY 2001/2002 Appropriated Value/2002		
Presidents Budget:	2.245	18.453
FY 2003 Pres Budget Submit:	57.211	61.368
FY2003		
40.464		
 <u>Funding:</u>		
FY 2001: Increase due to Program Adjustments (+\$3.695), (-\$.945) for SBIR and Minor Pricing Adjustments of (+\$-505).		
FY 2002: Increase for Common Command and Decision (+17.000K), Increase for Wideband Optically Multiplexed Radar beamfinder (+\$2.000K) and Decrease for Section 8123 (-\$547).		
 <u>Schedule:</u> Not Applicable		
 <u>Technical:</u> Not Applicable		
C. Other Program Funding Summary: Not applicable.		
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)		
PE 0603852N (Cooperative Engagement Capability)		
PE 0604307N (AEGIS Combat Systems Engineering)		
PE 0604755N (Ship Self Defense)		
PE 0604518N (CIC Conversion/Common Command and Decision)		
PE 0603879N (Single Integrated Air Picture)		
Acquisition Strategy: Not applicable.		
D. Schedule Profile: Not applicable.		

R-1 SHOPPING LIST - Item No. 65-4 of 65-5

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 4 of 5)

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Exhibit R-3 Cost Analysis								DATE:					February 2002	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER							
RDT&E, N			0603582N				Combat Systems Integration/Battle Force Interoperability							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract		
Combat Sys Integ Testing/SQI	WR/RC	NSWC PHD	8.200	6.100	VAR	7.200	VAR	7.099	VAR	Cont.	Cont			
Combat Sys Integ Testing/SQI	WR/RC	NSWC DD	0.000											
Combat Sys Integ Testing/SQI	WR/RC	VARIOUS	0.600			1.878		1.341		Cont.	Cont			
D-30 Process	WR/RC	NSWC PHD	4.100	3.300	VAR	4.292	VAR	4.233	VAR	Cont.	Cont			
D-30 Process	WR/RC	NSWC DD								N/A				
D-30 Process	WR/RC/PD	VARIOUS	0.150	0.100		1.108		1.114	VAR	Cont.	Cont			
DEP/BGIT Cert/JDEP	WR/RC	NSWC PHD												
DEP/BGIT Cert/JDEP	WR/RC	NSWC DD	17.406	15.306		16.602		16.100		Cont.	Cont			
DEP/BGIT Cert/JDEP	WR/RC/PD	VARIOUS	2.332			2.444		2.440	VAR	Cont.	Cont			
Optical Multi-plex Wideband Radar	WR/RC	NSWC CRANE	1.989	1.982		2.000								
Warfare Sys Engineering	WR/RC	NSWC DD	2.000	1.310		1.850		1.674		Cont.	Cont			
Warfare Sys Engineering	WR/RC/PD	VARIOUS	2.228	0.900		1.287		1.113		Cont.	Cont			
Common C&D	WR/RC	NSWC DD	5.000	5.000		N/A		N/A						
Common C&D Contract	VARIOUS	VARIOUS	24.362	14.332		17.000		N/A						
Contract Engineering Support	VARIOUS	VARIOUS	6.806	4.406	VAR	4.157		4.000	VAR	Cont.	Cont			
Contract Program Mgt Support	VARIOUS	VARIOUS	1.162	4.315		1.450		1.200						
Travel		NAVSEA TRAVEL	0.205	0.160		0.100		0.150		Cont.	Cont			
SBIR Assessment	VARIOUS	VARIOUS	1.065											
Subtotal Product Development			77.605	57.211		61.368		40.464		Cont.	Cont			
Remarks:														
Total Cost			77.605	57.211		61.368		40.464		Cont.	Cont			
Remarks:														

R-1 SHOPPING LIST - Item No. 65-5 of 65-5

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 5)

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA4				R-1 ITEM NOMENCLATURE Conventional Munitions/0603609N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	31.100	24.561	22.445	23.999	23.731	24.036	24.386	CONT.	CONT.
Conventional Fuze/Warhead Package/K1821	23.311	18.308	17.743	18.921	18.909	19.261	19.636	CONT.	CONT.
Non-Nuclear Expendable Ordnance/32299	0.836	0.924	0.937	1.057	0.993	0.991	0.990	CONT.	CONT.
Insensitive Munitions Advanced Development/S0363	4.971	2.851	3.765	4.021	3.829	3.784	3.760	CONT.	CONT.
Env Safe Ener Mat (S2611)	1.982	2.478	0.000	0.000	0.000	0.000	0.000	0.000	4.460
Quantity of RDT&E Articles									
A. Mission Description and Budget Item Justification Conventional Fuze/Warhead Package (Project K1821/U1821): The Navy requires improved lethality of air and surface launched ordnance to defeat advanced threats. This is the only Navy 6.3B RDT&E program that addresses improvements in warhead and fuze technology to meet this requirement. This program is a significant vehicle for orderly planning, and timely and effective transition of Navy 6.2 and 6.3A investments to Engineering and Manufacturing Development (E&MD) phase missile/weapon systems. This program addresses increased lethality against current and emerging threats, and is responsive to all mission areas -- anti-air, strike, defense suppression, theater defense and ship defense -- and supports development of complete ordnance sections. The current on-going projects address significant technology advancements for missile systems by developing mature physical concepts to enhance anti-air kill probability, advanced ordnance with augmented overland cruise missile defense and theater ballistic missile defense capabilities, and advanced seeker technology. The program supports the full spectrum of missile advanced development and technology improvements and in future years will continue to provide the vehicle to address emergent requirements by transitioning mature development efforts into weapon systems with minimal technical and financial risk. Non-Nuclear Expendable Ordnance (NNEO) (Project 32299): This item addresses improvements to Navy surface launched (2T) NNEO. It supports transition of the Multi-Function Fuze (MMF) from E&MD to production. Insensitive Munitions Advanced Development (IMAD) (Project S0363): Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft, and personnel. This IMAD program will provide, validate, and transition technology for explosives, propellants, and ordnance to enable production of munitions insensitive to unplanned stimuli with no reduction to combat performance. Environmentally Safe Energetic Materials (Project S2611): This project will mature and demonstrate energetic materials and processes for explosives, propellants, and pyrotechnics that minimize or eliminate any adverse environmental impact normally associated with these materials in production and demilitarization. These new environmentally safe materials will meet insensitive munitions and system performance requirements while lowering the total ownership costs of the weapon systems.									

R-1 SHOPPING LIST - Item No. 66 - 1 of 66 - 19

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 19)

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA4		Conventional Munitions/0603609N	
B. (U) Program Change Summary			
	FY 2001	FY 2002	FY 2003
FY 2002 President's Budget:	33.310	22.299	
Appropriated Value:	33.619	24.799	
Adjustments to FY2001/2002 Appropriated Value/	-2.519	-238	
FY 2002 President's Budget:			
FY 2003 Pres Budget Submit:	31.100	24.561	22.445
Funding:			
FY01: Change due to Small Business Innovative Research (SBIR) (-\$0.480), Below Threshold Reprogramming (BTR)			
(-\$1.659), and Minor Pricing Adjustments (-\$.380)			
FY02: Change due to Minor Pricing Adjustments (-\$238).			
Schedule: Not applicable.			
Technical: Not applicable.			

R-1 SHOPPING LIST - Item No. 66 -2 of 66- 19

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 19)

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CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA 4		PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions 0603609N		PROJECT NAME AND NUMBER Conventional Fuze and Warhead Package /K1821/U1821					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	23.311	18.308	17.743	18.921	18.909	19.261	19.636	Continuing	Continuing
RDT&E Articles Qty									
<p>A. Mission Description and Budget Item Justification 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.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS: 1. (U) FY 2001 PROGRAM ACCOMPLISHMENTS: (U) (\$10,371) MK 45 MOD 12/14 Target Detection Device (TDD): Continued Mk 45 Mod 12/14 TDD development. (U) (\$9,035) OFFICE OF SPECIAL PROJECTS (U) (\$1,505) Warhead Concept Selection: Initiated warhead effectiveness analysis, end game analysis and multi-point initiator improvements. (U) (\$975) MICRO ELECTRO-MECHANICAL SYSTEM SAFE AND ARM DEVICE: Conducted critical tests. (U) (\$1,425) Future Standard Missile Systems (FSMS) STUDIES: Continued system engineering studies to support mid and far term strategic planning for warhead and fuze development.</p> <p>-</p>									

R-1 SHOPPING LIST - Item No. 66- 3 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 19)

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA 4	PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N	PROJECT NAME AND NUMBER Conventional Fuze and Warhead Packaging /K1821/U1821

2. (U) FY 2002 PLAN:

- (U) (\$6,420) MK 45 MOD 12/14 TDD: Continue Mk 45 Mod 12/14 TDD development.
- (U) (\$7,123) OFFICE OF SPECIAL PROJECTS
- (U) (\$1,565) WARHEAD CONCEPT SELECTION: Continue warhead effectiveness analysis, end game analysis and multi-point initiator improvements.
- (U) (\$1,880) MICRO ELECTRO-MECHANICAL SYSTEM SAFE AND ARM DEVICE: Preliminary design risk reduction.
- (U) (\$1,320) FSMS STUDIES: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.

3. (U) FY 2003 PLAN:

- (U) (\$5,937) MK 45 MOD 12/14 TDD: Complete Mk 45 Mod 12/14 TDD development.
- (U) (\$2,900) OFFICE OF SPECIAL PROJECTS
- (U) (\$431) WARHEAD CONCEPT SELECTION: Complete selection process.
- (U) (\$7,040) ADVANCED WARHEAD DEVELOPMENT: Initiate Advanced Warhead Development.
- (U) (\$1,105) MICRO ELECTRO-MECHANICAL SYSTEM SAFE AND ARM DEVICE: Complete MEMS development.
- (U) (\$330) FSMS STUDIES: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Not applicable.

D. Program Schedule: Not Applicable.

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA 4			Conventional Munitions/0603609N			Conventional Fuze and Warhead Package/K1821/U1821						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Analysis	WR	NSWC/DD	30.476	0.270	11/00	0.400	11/01	1.916	11/02	Continuing	Continuing	
	WR	NAWC/China Lake	58.716	0.630	10/00	1.800	11/01	0.200	11/02	Continuing	Continuing	
	CPAF	Raytheon	6.074	0.000		1.500	11/01	0.200	11/02	Continuing	Continuing	
	PR	JHU/APL	0.000	1.100	05/01	0.820	11/01	0.220	11/02	Continuing	Continuing	
	RC	ONR	0.052	0.000		0.000		0.000		0.000	0.052	
	MIPR	MIT/LL	0.000	0.200	10/00	0.500	11/01	0.110	11/02	Continuing	Continuing	
	WR	SPAWAR	0.000	0.520	03/01	0.000		0.000		0.000	0.520	
	PD	Office of Special Projects	7.751	0.000		0.000		0.000		0.000	7.751	
Hardware Fabrication & Procurement	WR	NSWC/DD	6.012	0.245	10/00	0.167	11/01	1.261	11/02	Continuing	Continuing	
	WR	NAWC/China Lake	8.288	0.395	10/00	0.855	11/01	0.800	11/02	Continuing	Continuing	
	CPAF	Raytheon	0.500	8.016	02/01	2.485	11/01	2.428	11/02	Continuing	Continuing	
Other	PD	Office of Special Projects	32.514	9.035	10/00	7.123	11/01	2.838	11/02	Continuing	Continuing	
Subtotal Product Development			150.383	20.411		15.650		9.973		Continuing	Continuing	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 66 - 5 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 19)

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA 4			Conventional Munitions/0603609N			Conventional Fuze and Warhead Package/K1821/U1821						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Demonstration Test & Evaluation	WR	NSWC/DD	12.447	0.540	10/00	0.550	11/01	3.650	11/02	Continuing	Continuing	
	WR	NAWC/China Lake	13.482	2.100	10/00	0.793	11/01	1.800	11/02	Continuing	Continuing	
	CPAF	Raytheon	0.000	0.000		1.000	11/01	2.000	11/02	Continuing	Continuing	
Subtotal T&E			25.929	2.640		2.343		7.450				
Remarks:												
Program Management Support	WR	NSWC/DD	2.024	0.050	10/00	0.050	11/01	0.050	11/02	Continuing	Continuing	
	WR	NAWC/China Lake	3.310	0.050	10/00	0.050	11/01	0.050	11/02	Continuing	Continuing	
	C/FPI	TMAI	0.030	0.000		0.000		0.000		0.000	0.030	
	RC	NSWC/Indian Head	0.000	0.160	02/01	0.165	11/01	0.170	11/02	Continuing	Continuing	
Travel	PD	NAVSEA Travel	0.300	0.000	Various	0.050	Various	0.050	Various	Continuing	Continuing	
Subtotal Management			5.664	0.260		0.315		0.320				
Remarks:												
Total Cost			181.976	23.311		18.308		17.743		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 66 - 6 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 19)

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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA 4		PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N			PROJECT NAME AND NUMBER Non-Nuclear Expendable Ordnance (NNEO)/32299					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007		Cost to Complete	Total Cost
Project Cost	0.836	0.924	0.937	1.057	0.993	0.991	0.990		Continuing	Continuing
RDT&E Articles Qty										
<p>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 requirements. 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 supports the Multi-function Fuze (MFF) and Extended Range Propelling Charge. These will be used with 5"/54 gun ammunition.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 01 ACCOMPLISHMENTS: - (U) (\$.200) Multi-Function Fuze (MFF): OPEVAL Expense - (U) (\$.636) Multi-Function Fuze (MFF): Complete antenna improvements started in FY 00.</p> <p>2. (U) FY 02 PLANS: - (U) (\$.924) Multi-Function Fuze (MFF): Qualification of MFF.</p> <p>3. (U) FY 03 PLANS: - (U) (\$.937) Multi-Function Fuze (MFF): Complete Qualification of MFF.</p>										

R-1 SHOPPING LIST - Item No. 66 - 7 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 19)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA 4		PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N			PROJECT NAME AND NUMBER Non-Nuclear Expendable Ordnance (NNEO)/32299				
B. Other Program Funding Summary									
1. (U) Related RDT&E: PE 0603795 (Naval Surface Fire Support) 2. (U) The 5"/54 Ammunition will be qualified with the MFF. Approval decision for proceeding with Low Rate Initial Production in 3rd quarter FY99. Milestone C scheduled for 1st quarter FY04 .									
Procurement of Ammunition, Navy and Marine Corps (PANMC) 5"/54 Ammunition, BLIN 025000, Cost Code AC893 (Reno)									
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
	6.9	0	0	5.1	8.2	8.6	8.7	TBD	TBD
C. Acquisition Strategy: Award 5-Year (Multi-Option) Contract for MFF. As P3I are completed, they will be incorporated into the next production lot.									
D. Schedule Profile									
			FY 2002			FY 2003			FY 2004
Program Milestones									3Q MS C 3Q IOC
Engineering Milestones				3Q Release for Production					
T&E Milestones						1Q FA Test 4Q DT-IIB			1Q OPEVAL
Contract Milestones				4Q FA Delivery					2Q Full Rate Contract

R-1 SHOPPING LIST - Item No. 66 - 8 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 8 of 19)

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDTE&E, N BA 4			Conventional Munitions/0603609N			Non-Nuclear Expendable Ord (NNEO)/32299						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC Dahlgren	0.802	0.436	12/00	0.7	VAR	0.461	VAR	CONT.	CONT	N/A
	C/CPFF	ALLIANT	0.630	0.200	VAR	0.224	VAR	0.476	VAR	CONT.	CONT	N/A
	SS/CPFF	MOTOROLA	0.336	0.000		0				CONT.	CONT	N/A
	WR	NSWC Indian Head	0.600									
Subtotal Product Development			2.368	0.636		0.924		0.937				N/A
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 66 - 9 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 9 of 19)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA 4			Conventional Munitions/0603609N			Non-Nuclear Expendable Ord (NNEO)/32299						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC DAHLGREN	0.523	0.000		0.000		0.000		CONT	CONT.	N/A
	WR	NAWC CHINA LAKE	0.200	0.000		0.000		0.000		CONT	CONT.	N/A
Operational Test & Evaluation	WR	COMOPTEVFOR	0.000	0.200		0.000		0.000				N/A
Subtotal T&E			0.723	0.200		0.000		0.000				
Remarks:												
Contractor Engineering Support		EDO	0.032									
Government Engineering Support	WR	NSWC DAHLGREN	0.273	0.000		0.000		0.000		CONT	CONT.	N/A
Program Management Support	WR	NSWC DAHLGREN	0.093	0.000		0.000		0.000		CONT	CONT.	N/A
Travel	WR	NSWC DAHLGREN	0.020									
Labor (Research Personnel)												
Overhead	WR	NSWC DAHLGREN	0.020									
Subtotal Management			0.438	0.000		0.000		0.000		CONT	CONT.	N/A
Remarks:												
Total Cost			3.529	0.836		0.924		0.937		CONT.	CONT.	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 66 - 10 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 10 of 19)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4				PROJECT NAME AND NUMBER INSENSITIVE MUNITIONS ADVANCED DEVELOPMENT / S0363					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	4.971	2.851	3.765	4.021	3.829	3.784	3.760	Continuing	Continuing
RDT&E Articles Qty									
<p>A. (U) Mission Description and Budget Item Justification: Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet impact, thus presenting a great hazard to ships, aircraft and personnel. This program will provide, validate and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. The Insensitive Munitions Advanced Development (IMAD) Program is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuzes and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship survivability and satisfying performance and readiness requirements. Each technology area is divided into subtasks addressing specific munition/munition class IMAD deficiencies. Energetic materials producibility is demonstrated to assure national capability to produce and load munitions systems. The program is being closely coordinated with other Military Departments, NATO and allied countries to eliminate redundant efforts and maximize efficiency. A joint service IMAD requirement has been developed. Insensitive munitions are identified as a DoD critical technology requirement and considered as part of a weapon design per DoD 5000.2R.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS: - (U) (\$1.517) Continued validation and assessment of weapon systems POA&Ms for IMAD compliance. Continued compilation and analysis of weapon system, energetic material and generic technology IMAD test data. - (U) (\$1.796) Demonstrated high explosives that show improved IMAD characteristics while maintaining or improving operational performance. Continued qualification of internal blast explosive. Continued evaluation of pressed metal accelerating explosives, including new high performance applications. Evaluated improved underwater explosives. Completed evaluation and qualification of booster explosives formulations. - (U) (\$0.190) Evaluated ordnance and container concepts. Conducted system demonstrations of new high explosives combined with improved warhead and booster designed to support technology transitions. Continued modeling applications that reduce and enhance IMAD warhead design.</p>									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDTE, N BA4	PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N	PROJECT NAME AND NUMBER INSENSITIVE MUNITIONS ADVANCED DEVELOPMENT / S0363
<p>1. (U) FY 2001 ACCOMPLISHMENTS: (Continued)</p> <ul style="list-style-type: none"> - (U) (\$1.468) Evaluated and demonstrated IMAD propellants and propulsion systems that provide improved or comparable performance to in-service systems and better IMAD characteristics. Combined candidate IMAD propellants and case concepts to demonstrate compliance with IMAD and performance requirements. Continued evaluation of high-pressure propellants in high-pressure composite motor cases. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$1.104) Continue validation and assessment of weapon systems POA&Ms for IMAD compliance. Continue compilation and analysis of weapon system, energetic material and generic technology IMAD test data. - (U) (\$0.660) Demonstrate high explosives that show improved IMAD characteristics while maintaining or improving operational performance. Continue qualification of internal blast explosive. Continue evaluation of pressed metal accelerating explosives. Begin qualification high performance booster explosive to weapons systems. - (U) (\$0.050) Evaluate ordnance and container concepts. Continue modeling applications that reduce and enhance IMAD warhead design. - (U) (\$1.037) Evaluate and demonstrate IMAD propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IMAD characteristics. Combine candidate IMAD propellants and case concepts to demonstrate compliance with IMAD and performance requirements. Continue demonstration of an insensitive, multi-mission, high performance rocket motor. <p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$1.425) Continue validation and assessment of weapon systems POA&Ms for IMAD compliance. Continue compilation and analysis of weapon system, energetic material and generic technology IMAD test data. - (U) (\$0.860) Demonstrate high explosives that show improved IMAD characteristics while maintaining or improving operational performance. Continue qualification of internal blast explosive. Continue evaluation of pressed metal accelerating explosives. Begin qualification high performance booster explosive to weapons systems. - (U) (\$0.050) Evaluate ordnance and container concepts. Continue modeling applications that reduce and enhance IMAD warhead design. - (U) (\$1.430) Evaluate and demonstrate IMAD propellants and propulsion systems which provide improved or comparable performance to in-service systems and better IMAD characteristics. Combine candidate IMAD propellants and case concepts to demonstrate compliance with IMAD and performance requirements. Continue demonstration of an insensitive, multi-mission, high performance rocket motor. 		

R-1 SHOPPING LIST - Item No. 66 - 12 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 12 of 19)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4	PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N	PROJECT NAME AND NUMBER INSENSITIVE MUNITIONS ADVANCED DEVELOPMENT / S0363
<p>B. (U) OTHER PROGRAM FUNDING SUMMARY:</p> <p>(U) RELATED RDT&E: (U) PE 0601153N (Defense Research Sciences) (U) PE 0602111N (Surface/Aerospace Surveillance and Weapons Technology) (U) PE 0602314N (Undersea Surveillance and Weapons Technology) (U) PE 0602315N Mine Counter Measures ((MCM), Mining and Special Warfare Technology) (U) PE 0603216N (Aviation Survivability) Project W0592 Aircraft and Ordnance Safety (U) PE 0604603N (Unguided Conventional Air-launched Weapons) (U) Cooperative technology transfer efforts with all weapons project offices are in progress.</p> <p>C. (U) ACQUISITION STRATEGY: NOT APPLICABLE</p> <p>D. (U) SCHEDULE PROFILE: NOT APPLICABLE</p>		

R-1 SHOPPING LIST - Item No. 66 - 13 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 13 of 19)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA4			Conventional Munitions/0603609N			INSENSITIVE MUNITIONS ADVANCED DEVELOPMENT / S0363						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Propulsion Dev. and Eval.	WR	NAWC WPN DIV/China Lake	81.604	1.468	11/00	1.037	11/01	1.430	11/02	Continuing	Continuing	NA
	RCP	NAWC WPN DIV/China Lake	10.250	0.000	N/A	0.000	N/A	0.000	N/A	Continuing	Continuing	NA
Explosives Dev. and Eval.	WR	NSWC/Indian Head Div	65.944	1.786	11/00	0.650	11/01	0.850	11/02	Continuing	Continuing	NA
Ordnance Dev. and Eval.	WR	NSWC/Dahlgren Div	19.100	0.190	11/00	0.050	11/01	0.050	11/02	Continuing	Continuing	NA
Pyrotechnics Dev. and Eval.	WR	NSWC/Crane Div	6.540	0.010	11/00	0.010	11/01	0.010	11/02	Continuing	Continuing	NA
Subtotal Product Development			183.438	3.454		1.747		2.340		Continuing	Continuing	NA
<p>Remarks: This cost category includes technology development and subsequent test and evaluation of Insensitive Munitions concepts for propulsion, explosives, ordnance and pyrotechnics. Environmentally Safe Energetics Development was a Congressional add for FY 99 (in S2611) and FY 00 (in S0363). The efforts transitioned to S0363 in FY 00.</p>												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
<p>Remarks: Support categories not applicable to this Non-ACAT program.</p>												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Conventional Munitions/0603609N			INSENSITIVE MUNITIONS ADVANCED DEVELOPMENT / SO363						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
<p>Remarks: This project, S0363, IMAD, is a Non-ACAT program. As such no formal, separate Developmental or Operational Test (DT or OT) and evaluation plans or efforts are included. Formal DT and OT is conducted once the concepts developed by IMAD are transitioned to weapon development and product improvement programs.</p>												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support		NSWC IH DIV	27.505	1.480	11/00	1.084	11/01	1.405	11/02	Continuing	Continuing	NA
Travel		NOSSA	0.291	0.037	10/00	0.020	10/01	0.020	10/02	Continuing	Continuing	NA
Labor (Research Personnel)												
Overhead												
Subtotal Management			27.796	1.517		1.104		1.425		Continuing	Continuing	NA
<p>Remarks:</p>												
Total Cost			211.234	4.971		2.851		3.765		Continuing	Continuing	NA
<p>Remarks:</p>												

R-1 SHOPPING LIST - Item No. 66 - 15 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 15 of 19)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4		PROJECT NAME AND NUMBER ENVIRONMENTALLY SAFE ENERGETIC MATERIALS / S2611							
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	1.982	2.478	0.000	0.000	0.000	0.000	0.000	0.000	4.460
RDT&E Articles Qty									
<p>A. (U) Mission Description and Budget Item Justification: The development, manufacture and demilitarization of energetic materials generate significant quantities of waste. The generation and subsequent disposal of this waste has come under increased scrutiny and regulation by Federal, State and local officials. Additionally, due to environmental compliance and waste disposal issues, the cost of energetic materials is rapidly increasing. New technologies, energetic materials and ingredients that minimize any adverse environmental impact are being developed within the Navy's science and technology initiatives. These technologies are commonly referred to as "green" energetic materials. The efforts under this project will provide, validate, and transition technology for explosives, propellants and pyrotechnics using materials and compositions that have low adverse environmental impact in production and demilitarization, will meet insensitive munitions requirements and will have no reduction to combat performance.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS: - (U) (\$1.982) Continued the evaluation and demonstration of solventless processing of explosive molding powder. Demonstrated the recycle, recovery and reuse of hydrolyzable rocket propellant formulations. Identified and evaluated low cost thermoplastic elastomer binders. Evaluated properties of reclaimed energetic ingredients for use in Navy explosives and propellants. Evaluated and predicted the environmental impact and associated life cycle costs for energetic materials and processes.</p> <p>2. (U) FY 2002 PLAN: - (U) (\$2.478) Continue identification and evaluation of low cost thermoplastic elastomer binders. Evaluate candidate bomb fill with reduced environmental impact in manufacturing and demilitarization. Continue to evaluate properties of reclaimed energetic ingredients for use in Navy explosives and propellants. Initiate the development and evaluation of an insensitive green minimum smoke propellant. Evaluate and predict the environmental effect and associated life cycle costs for energetic materials and processes.</p>									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA4	PROGRAM ELEMENT NAME AND NUMBER Conventional Munitions/0603609N	PROJECT NAME AND NUMBER ENVIRONMENTALLY SAFE ENERGETIC MATERIALS / S2611
<p>2. (U) FY 2002 PLAN (Continued): Establish a methodology and measurable parameters to evaluate the environmental effects of energetics manufacturing, use and demilitarization.</p> <p>3. (U) FY 2003 PLAN: Not Applicable.</p> <p>B. (U) OTHER PROGRAM FUNDING SUMMARY: NOT APPLICABLE</p> <p>(U) RELATED RDT&E:</p> <p>(U) PE 0601153N (Defense Research Sciences)</p> <p>(U) PE 0602111N (Surface/Aerospace Surveillance and Weapons Technology)</p> <p>(U) PE 0602314N (Undersea Surveillance and Weapons Technology)</p> <p>(U) PE 0602315N Mine Counter Measures ((MCM), Mining and Special Warfare Technology)</p> <p>(U) PE 0603216N (Aviation Survivability) Project W0592 Aircraft and Ordnance Safety</p> <p>(U) PE 0604603N (Unguided Conventional Air-launched Weapons)</p> <p>C. (U) ACQUISITION STRATEGY: NOT APPLICABLE</p> <p>D. (U) SCHEDULE PROFILE: NOT APPLICABLE</p>		

R-1 SHOPPING LIST - Item No. 66 - 17 of 66 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 17 of 19)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA4			Conventional Munitions/0603609N			ENVIRONMENTALLY SAFE ENERGETIC MATERIALS / S2611						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Technology Development	WR	NSWC IH DIV	0.994	1.977	10/00	2.101	02/02	0.000	NA	0.000	5.072	NA
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.994	1.977		2.101		0.000		0.000	5.072	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Categories do not apply.												

R-1 SHOPPING LIST - Item No. 66 - 18 of 66 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 18 of 19)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N / BA4			Conventional Munitions/0603609N			ENVIRONMENTALLY SAFE ENERGETIC MATERIALS / S2611						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.000	0.000							0.000	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
<p>Remarks: This project, S2611, Environmentally, is a Non-ACAT program and a FY 01 Congressional plus-up. As such no formal, separate developmental or operational test and evaluation plans or efforts are included. Formal DT and OT is conducted once the concepts developed are transitioned to weapon development and product improvement programs.</p>												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	WR	NSWC IH DIV	0.000	0.000	N/A	0.372	02/02	0.000	NA	0.000	0.372	
Travel	WR	NOSSA		0.005	10/00	0.005	01/02				0.010	
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.005		0.377		0.000		0.000	0.382	
<p>Remarks:</p>												
Total Cost			0.994	1.982		2.478		0.000		0.000	5.454	
<p>Remarks:</p>												

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EXHIBIT R-2a, RDT&E Project Justification								DATE:			
								February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Demonstration/Validation		0603611M Marine Corps Assault Vehicles				B0020 Advanced Amphibious Assault Vehicle (AAAV)					
COST (\$ in Millions)		Prior Yrs Cost	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
B0020 ADVANCED AMPHIBIOUS ASSAULT VEHICLE		390.137	142.520	260.627	272.092	246.698	126.083	110.160	71.329	0.000	1,619.646
Quantity of RDT&E Articles		3			5	4					
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(U) The Advanced Amphibious Assault Vehicle (AAAV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The AAAV will provide the principal means of tactical surface mobility for the Marine Air Group Task Force (MAGTF) during both ship-to-objective maneuvers and subsequent combat operations ashore as part of the Navy and Marine Corps concepts within the Expeditionary Maneuver Warfare capstone. The AAAV will provide the Marine Corps with the capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations. The AAAV replaces the AAV7A1 Vehicle, which was originally fielded in the early 1970's. The AAAV is a self-deploying, high-water speed, amphibious, armored, tracked vehicle capable of operating in all weather as well as Nuclear, Biological, and Chemical (NBC) environments.</p> <p>The AAAV program is the only ACAT-1D program managed by the Marine Corps. The AAAV is the next generation of Marine Corps Assault Vehicles being developed to satisfy the requirements of the 21st Century Marine Warfighters. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the AAAV will provide the Marine Corps with the tactical mobility assets required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone. Acquisition of the AAAV is critical to the Marine Corps. The total AAAV requirement is for 1,013 weapon systems. The AAAV program remains the Marine Corps number one priority ground system acquisition.</p> <p>The program received approval to enter the Systems Development and Demonstration (SDD) Phase (formerly Engineering and Manufacturing Development) of the acquisition process during the Milestone II Defense Acquisition Board Readiness Meeting held on 26 November 2000. All program exit criteria were successfully met or exceeded. The SDD Phase (2001 through 2007) will include validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing the Life Cycle Management for AAAV.</p> <p>PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>FY 2001 Accomplishments:</p> <ul style="list-style-type: none">· (U) \$ 92.934 Complete the PDRR phase. Continue the AAAV (C) system development, the survivability program, design maturation and developmental testing of the prototypes.· (U) \$ 26.856 Initiate material procurement for the System Development and Demonstration (SDD) phase prototypes. Definitize and award the SDD contract. Initiate work under the SDD contract.· (U) \$ 12.641 Continue to provide in-house technical support.· (U) \$ 6.600 Continue to provide program support to coordinate and update program planning, program analysis, and program execution.· (U) \$ 3.489 Commence Early Operational Assessment (EOA) testing on PDRR prototype. Conduct EOA assessment on AAAV(C) mock-up. Complete Ballistic Hull and Turret testing. <p>(U) Total \$ 142.520</p>											

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EXHIBIT R-2a, RDT&E Project Justification				DATE:	
				February 2002	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME	
RDT&E, N /BA-4 Demonstration/Validation		0603611M Marine Corps Assault Vehicles		B0020 Advanced Amphibious Assault Vehicle (AAAV)	
FY 2002 Planned Program:					
· (U) \$ 237.872 Initiate fabrication of the SDD phase prototypes. Continue design development of the AAAV (P) and AAAV (C). Continue developmental testing of PDRR prototypes. Continue AAAV survivability program. Initiate contractor/government shakedown testing of SDD prototypes.					
· (U) \$ 10.184 Continue to provide in-house technical support.					
· (U) \$ 7.576 Continue to provide program support to coordinate and update program planning, program analysis, and program execution.					
· (U) \$ 0.800 Initiate development of AAAV training courseware.					
· (U) \$ 4.195 Initiate Ballistic Vulnerability testing of one PDRR prototype. Conduct RAM-D testing of PDRR prototypes. Complete EOA.					
(U) Total \$ 260.627					
FY 2003 Planned Program:					
· (U) \$ 244.922 Continue design development, manufacturing planning, and producibility design enhancements of the AAAV(P) and AAAV(C) designs. Continue the AAAV survivability program. Continue fabrication and start delivery of E&MD prototypes.					
· (U) \$ 2.184 Continue to provide in-house technical support.					
· (U) \$ 7.172 Continue to provide program support to coordinate and update program planning, program analysis, and program execution.					
· (U) \$ 8.361 Initiate development of AAAV training devices/simulators. Continue development of AAAV training courseware.					
· (U) \$ 9.453 Complete Ballistic Vulnerability Testing of PDRR prototype. Initiate DT of SDD prototypes. Initiate Joint Live Fire Testing of MK-46 weapon station.					
(U) Total \$ 272.092					
B. (U) PROJECT CHANGE SUMMARY					
		FY2001	FY2002	FY 2003	
(U) FY 2002 President's Budget:		147.100	263.066		
(U) Adjustments from the President's Budget:					
(U) SBIR/STTR Transfer		-3.837			
(U) Execution Adjustment					
(U) Minor Affordability Adjustment					
(U) Program Adjustment		-0.743	-2.439		
(U) FY 2003 President's Budget:		142.520	260.627	272.092	
CHANGE SUMMARY EXPLANATION:					
(U) Funding:	FY 2001 reflects a decrease of \$3,837M for SBIR and \$.743M for program adjustments. FY 2002 reflects Congressional pro-rata reductions of \$2.324M and \$.115M.				
(U) Schedule:	Not Applicable.				
(U) Technical:	Not Applicable.				

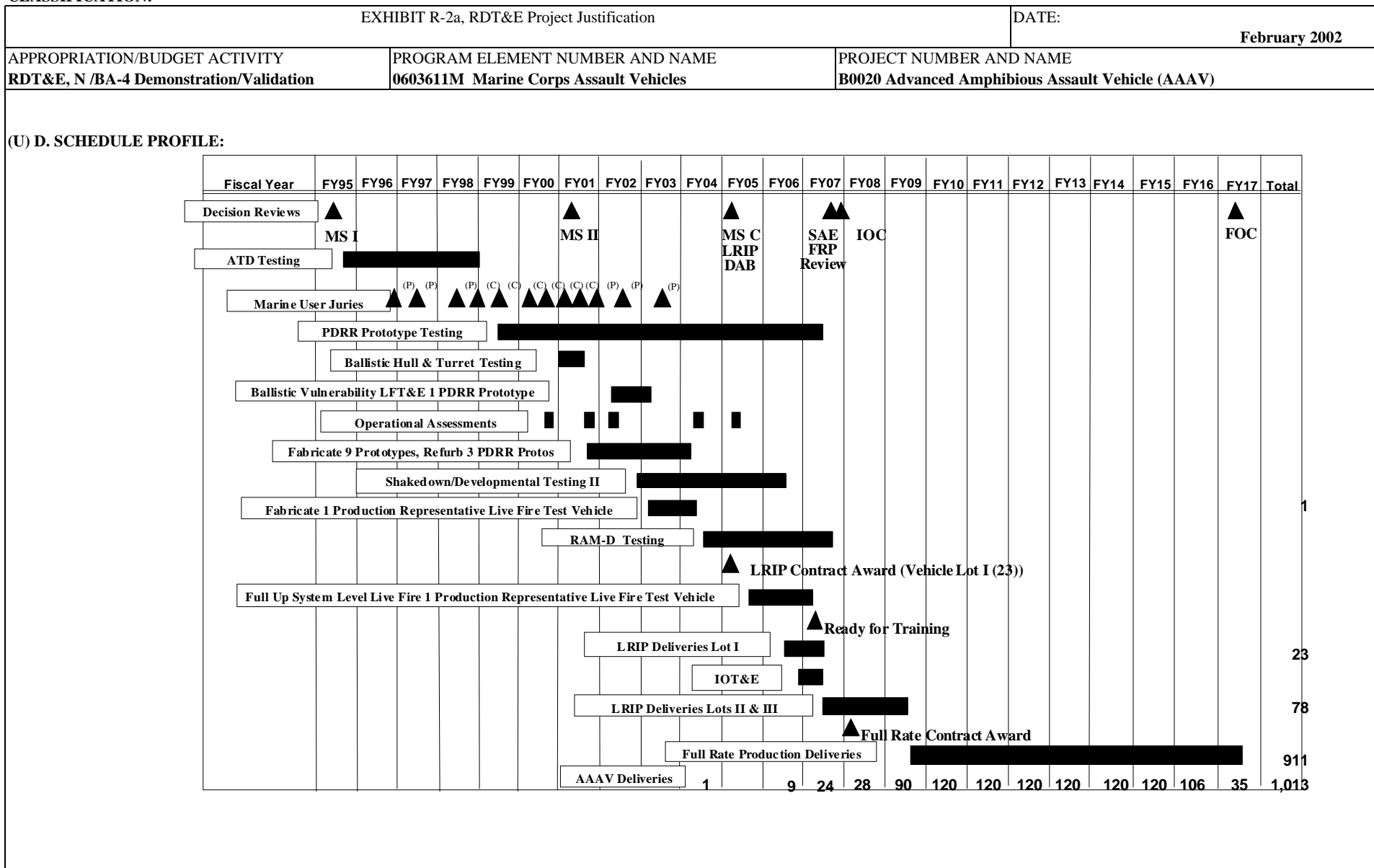
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EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME			
RDT&E, N /BA-4 Demonstration/Validation	0603611M Marine Corps Assault Vehicles				B0020 Advanced Amphibious Assault Vehicle (AAAV)			
(U) B. OTHER PROGRAM FUNDING SUMMARY:								
Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost
(U) PANMC, BLI #147500, AAAV				2.575	6.816	13.500	39.016	
(U) PMC BA2, BLI #202200, AAAV			14.718	112.444	256.111	245.527	492.503	6633.889 7755.192
(U) PMC BA7 (Spares), BLI (NA), AAAV			0.506		11.714	10.133	20.770	287.061 330.184
(U) PMC, AAAV Totals			15.224	112.444	267.825	255.660	513.273	6920.950 8085.376
(U) Related RDT&E: Not Applicable.								
(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project C0021, AAV7A1.								
(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project C2237, AVTB.								
(U) C. ACQUISITION STRATEGY:								
The AAAV 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), vehicle unit cost, and add flexibility to the program schedule. Three mature PDRR prototypes were developed and are currently undergoing developmental testing to further vehicle maturity. During the SDD phase of the program, nine vehicles will be manufactured. A tenth vehicle will be manufactured for use during Full Up System Level Live Fire testing planned to begin in FY05. LRIP vehicles will be developed following the LRIP decision review in FY05 for use during Initial Operational Test and Evaluation (IOT&E). Initial Operational Capability (IOC) and Full Operational Capability (FOC) will occur in FY07 and FY17, respectively.								
The AAAV management strategy is event driven, designed to ensure a logical progression through the AAAV acquisition to reduce risk, ensure affordability, and provide adequate information to decision makers regarding acquisition progress. The AAAV 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 AAAV 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. 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 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 AAAV is to award the vast majority of the work to one prime contractor, competitively selected in 1996. GDLS operating through its division GDAMS will be responsible for designing and producing the vehicle and providing support for testing from PDRR through LRIP. The contracting strategy for full rate production and subsequent operation and support is to encourage competition during the SDD phase. 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 is currently provided by a competitively awarded firm-fixed price, level of effort contract and will be recompeteted during FY03. The Life Cycle Support Contract is scheduled for award during FY06 for a portion of the initial operations and maintenance support for the fielded AAAVs.								

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Exhibit R-3 Cost Analysis								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NUMBER AND NAME				
RDT&E, N /BA-4 Demonstration/Validation				0603611M Marine Corps Assault Vehicles				B0020 Advanced Amphibious Assault Veh.(AAAV)				
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location		Total PY s Cost		FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
PDRR Contract	CPAF	GDLS - PDRR Award		306.769		92.934	1/					\$400M
SDD Contract	CPAF	GDLS - SDD Award		0.000		26.856	2/	237.872	2/	244.922	2/	\$712M
Subtotal Program Dev Spt				306.769		119.790		237.872		244.922		
Remarks:												
1/ The PDRR contract was awarded June 1996. The contract award is for the entire PDRR effort and is incrementally funded.												
2/ The SDD contract was definitized in July 2001. The SDD contract is for the entire SDD effort and is incrementally funded.												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location		Total PY s Cost		FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
Program Support		EG&G, Manassas, VA		8.040		5.820	3/	4.497	3/	4.471	3/	\$23M
Program Support		Misc. Government Contracts		8.762		0.780	4/	3.079	4/	2.701	4/	
Training devices/simulators		Misc. Government Contracts		0.000		0.000		0.800	4/	8.361	4/	
Subtotal Program Support				16.802		6.600		8.376		15.533		
3/ EG&G contract (FFP with options) was awarded August 1998 for contract performance thru 2003.												
4/ Various contract award dates.												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location		Total PY s Cost		FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
Testing		Miscellaneous		7.747		3.489	4/	4.195	4/	9.453	4/	
Subtotal T&E				7.747		3.489		4.195		9.453		
Remarks:												
4/ Various contract award dates.												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Demonstration/Validation			0603611M Marine Corps Assault Vehicles				B0020 Advanced Amphibious Assault Veh.(AAAV)					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location		Total PY s Cost		FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
In-house technical support		Various Government Labs		58.819		12.641		10.184		2.184		
Subtotal Management				58.819		12.641		10.184		2.184		
Remarks:												
Total Cost						142.520		260.627		272.092		

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation		PROGRAM ELEMENT NUMBER AND NAME 0603612M Marine Corps Mine/Countermeasures Systems				PROJECT NUMBER AND NAME C2106 Advance Mine Detector			
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	0.000	0.000	0.497	5.881	5.754	2.907	0.000	0.000	15.039
RDT&E Articles Qty									

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

The Advance Mine Detector (AMD) will be a man-portable system capable of detecting both metallic and nonmetallic buried mines regardless of fuse type. The AMD will alleviate a critical deficiency for detection of plastic, surf zone and water mines. Current mine detection technologies are only able to detect metallic mines.

PROGRAM ACCOMPLISHMENTS AND PLANS

(U) **FY 2001 Accomplishments:** Not Applicable.

(U) **FY 2002 Planned Program:** Not Applicable

(U) **FY 2003 Planned Program:**

- (U) \$ 0.497 Prepare for program transition to MARCORSYSCOM from ONR. Provide program management and technical support, travel, and update all program documentation.

(U)Total \$ 0.497

PROJECT CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:			
(U) Adjustments from the President's Budget:	0.000	0.000	
(U) SBIR/STTR Transfer			
(U) Execution Adjustment			
(U) Minor Affordability Adjustment			
(U) Program Adjustment			
(U) FY 2003 President's Budget:	0.000	0.000	0.497

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation		PROGRAM ELEMENT NUMBER AND NAME 0603612M Marine Corps Mine/Countermeasures Systems				PROJECT NUMBER AND NAME C2106 Advance Mine Detector				
(U) C. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost	
PMC BLI 632500 Adv Mine Detector		0.000	0.000	0.000	0.000	0.000	3.232	21.116	0.000	24.348
(U) Related RDT&E: Not Applicable.										
(U) D. ACQUISITION STRATEGY: By leveraging off an ONR research and development program for mine detection, MCSC will maintain active involvement in the AMD development during Concept Exploration. A backpack prototype, configured to detect TNT, RDX, tetryl and metallic mines, will be delivered 2nd quarter FY 03 for MCSC test and evaluation. Results will determine readiness for a Milestone B decision. MCSC will transition the demonstrated technology into System Development and Demonstration phase for further development. MCSC will award a cost plus contract with negotiated contractor incentives in the areas of weight, sweep speed, and power consumption. After completion of Milestone B the program will go into LRIP. MSCS will conduct IOT&E of LRIP items in preparation for full rate production. The production phase will employ a fixed price production contract.										
(U) E. SCHEDULE PROFILE: Not Applicable.										

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
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 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost	32.755	34.894	27.777	20.680	21.388	13.941	7.297	Cont	Cont
C1964 Anti-Armor Weapon System	0.485	0.624	0.888	0.824	0.544	0.552	0.560	Cont	Cont
C2112 Lightweight 155mm Howitzer (LW155)	13.446	13.085	11.633	5.970	0.000	0.000	0.000	0.000	44.134
C2113 Short Range Air-Tank Weapon (SRAW/Predator)	4.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.013
C2256 Integrated Infantry Combat System	2.462	1.728	1.779	1.799	1.814	1.697	1.730	Cont	Cont
C2507 Family of Small Craft	0.896	2.904	1.065	1.648	1.710	0.000	0.000	0.000	8.223
C2508 Internally Transportable Vehicle (ITV)	4.125	3.965	1.989	0.000	0.000	0.000	0.000	0.000	10.079
C2614 SMAW Follow-On	2.908	0.000	10.423	10.439	16.822	9.815	1.116	0.000	51.523
C2615 M1A1 Antipersonnel Ammunition	0.000	0.000	0.000	0.000	0.498	1.877	3.891	Cont	Cont
C2998 Innovative Stand-Off Door Breacher	4.420	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.420
C9116 Nanoparticles Neutralization of Facility Threats	0.000	12.588	0.000	0.000	0.000	0.000	0.000	0.000	12.588
Quantity of RDT&E Articles (C2508 ITV)	8								
(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.									

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																																	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation		PROGRAM ELEMENT (PE) NAME AND NO. 0603635M Marine Corps Ground Combat/Supporting Arms Systems																																	
<p>B. PROGRAM CHANGE SUMMARY</p> <table> <thead> <tr> <th></th> <th>FY2001</th> <th>FY2002</th> <th>FY2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2001 President's Budget:</td> <td>32.416</td> <td>25.957</td> <td></td> </tr> <tr> <td>(U) Adjustments from the President's Budget:</td> <td></td> <td></td> <td></td> </tr> <tr> <td> (U) SBIR/STTR Transfer</td> <td>-0.507</td> <td></td> <td></td> </tr> <tr> <td> (U) Execution Adjustment</td> <td>-0.139</td> <td>-5.000</td> <td></td> </tr> <tr> <td> (U) Minor Affordability Adjustment</td> <td></td> <td>-0.312</td> <td></td> </tr> <tr> <td> (U) Program Adjustment</td> <td>0.985</td> <td>14.249</td> <td></td> </tr> <tr> <td>(U) FY 2002 President's Budget:</td> <td>32.755</td> <td>34.894</td> <td>27.777</td> </tr> </tbody> </table> <p>CHANGE SUMMARY EXPLANATION:</p> <p> (U) Funding: See Above. (See R-2a for breakout at project level).</p> <p> (U) Schedule:</p> <p> (U) Technical:</p>					FY2001	FY2002	FY2003	(U) FY 2001 President's Budget:	32.416	25.957		(U) Adjustments from the President's Budget:				(U) SBIR/STTR Transfer	-0.507			(U) Execution Adjustment	-0.139	-5.000		(U) Minor Affordability Adjustment		-0.312		(U) Program Adjustment	0.985	14.249		(U) FY 2002 President's Budget:	32.755	34.894	27.777
	FY2001	FY2002	FY2003																																
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(U) FY 2002 President's Budget:	32.755	34.894	27.777																																

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603635M Marine Corps Ground Combat/Supt Arms			C1964 Anti-Armor Weapon System					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	0.485	0.624	0.888	0.824	0.544	0.552	0.560	Cont	Cont
RDT&E Articles Qty									

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

(U) This project provides for Marine Corps participation in the Joint Anti-Armor Program entitled Javelin (Advanced Anti-Tank Weapon System - Medium (AAWS-M)) and the Anti-Armor Weapon System - Heavy (AAWS-H). The Javelin weapon system Pre-Planned Product Improvement (P3I) program will provide the Marine Corps and Army with state-of-the-art capability to destroy sophisticated and future armored threats. The AAWS-H is a long range, antitank weapon system that will replace the Tube Launched, Optically Tracked, Wire Guided Missile System. It will satisfy an operational requirement to provide increased range (4000 meters), increased lethality against all armored threats, to include explosive reactive armor, active protection, increased probability of hit and kill and increased gunner survivability. Possible Light Armored Vehicle-Anti Tank usage would promote commonality among Marine Corps systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY 2001 Accomplishments

- (U) \$ 0.100 Conducted Engineering/Technical support to monitor/participate in Product Qualification Testing and P3I for the Javelin program.
- (U) \$ 0.220 Conducted Engineering/Technical support to monitor and participate in technical developments in the AAWS-H program.
- (U) \$ 0.136 Conducted alternatives analysis for AAWS-H candidate systems.
- (U) \$ 0.029 Provided Program Office support for the AAWS-H program.

(U)Total \$ 0.485

(U) FY 2002 Planned Program

- (U) \$ 0.242 Engineering/Technical support to participate in Product Qualification Testing and P3I for the Javelin program.
- (U) \$ 0.338 Engineering/Technical support to participate in technical developments in the AAWS-H program.
- (U) \$ 0.044 Program Office documentation support for the AAWS-H program.

(U)Total \$ 0.624

(U) FY 2003 Planned Program:

- (U) \$ 0.255 Engineering/Technical support to participate in Product Qualification Testing and P3I for the Javelin program.
- (U) \$ 0.344 Engineering/Technical support to participate in technical developments in the AAWS-H program.
- (U) \$ 0.200 Conduct integration testing for AAWS-H program.
- (U) \$ 0.089 Program Office documentation support for the AAWS-H program.

(U)Total \$ 0.888

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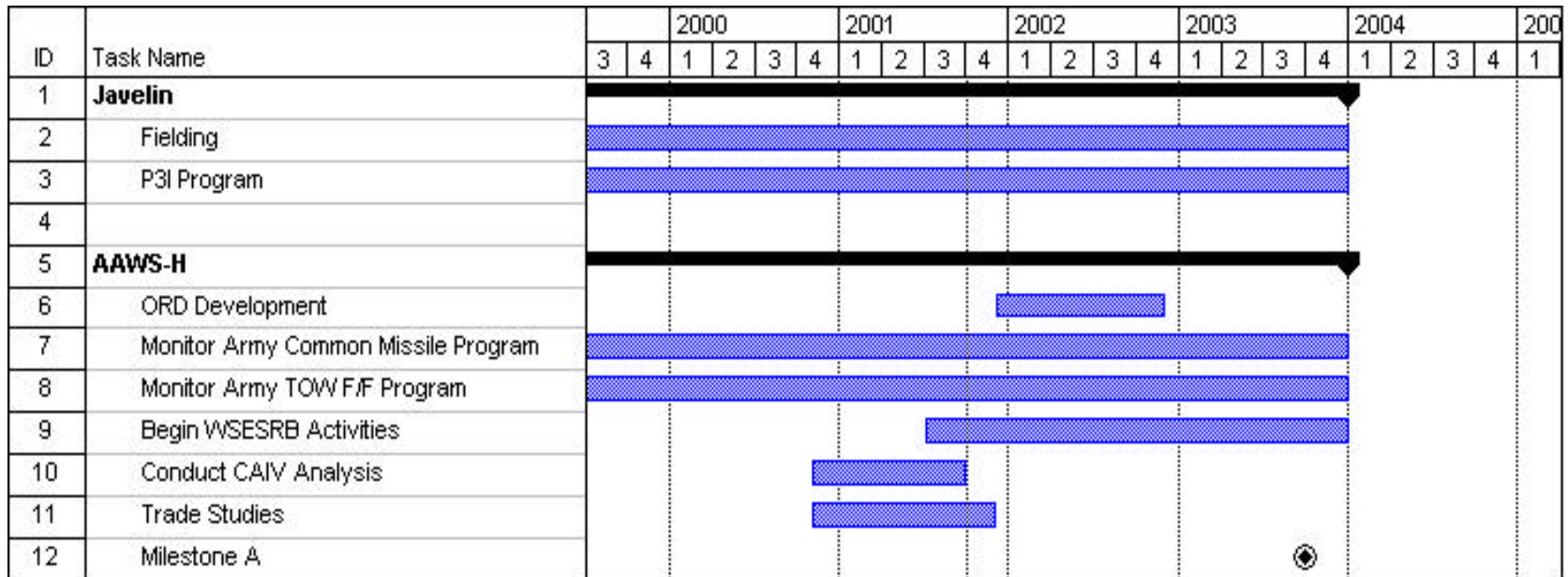
EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME						
RDT&E, N / BA-4	0603635M Marine Corps Ground Combat/Supt Arms		C1964 Anti-Armor Weapon System						
Project Change Summary	FY 2001	FY 2002	FY 2003						
(U) FY2002 President's Budget	0.608	0.630							
(U) Adjustments to Previous President's Budget									
SBIR/STTR Transfer	-0.002								
Execution Adjustment									
Minor Affordability Adjustment		-0.006							
Program Adjustment	-0.121								
(U) FY2003 President's Budget	0.485	0.624	0.888						
CHANGE SUMMARY EXPLANATION:									
(U) Funding: See Above.									
(U) Schedule: Not Applicable.									
(U) Technical: Not Applicable.									
B. (U) OTHER PROGRAM FUNDING SUMMARY:									
Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
(U) PMC BLI# 301100	29.783	1.023	1.049	0.000	0.000	0.000	6.183	0.000	38.038
(U) Related RDT&E: Not Applicable.									
(U) C. ACQUISITION STRATEGY:									
AAWS-H - The acquisition strategy anticipates a Competetively Awarded Cost Plus Development Contract with follow-on Firm Fixed Price Production Contract. JAVELIN - Acquisition strategy provides for pre-planned improvements for the Javelin hardware which is procured under a Firm Fixed Price Multi-Year Contract. The first Multi-Year covers FY 97 through FY 99. Hardware on this contract includes the Command Launch Unit (CLU), Tactical Round, Battery Unit, Basic Skills Trainer, and Field Tactical Trainer. The second Multi-Year covers the years 2000-2003.									

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EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME			
RDT&E, N / BA-4		0603635M Marine Corps Ground Combat/Supt Arms		C1964 Anti-Armor Weapon System			

(U) D. SCHEDULE PROFILE:



Program Funding Summary

Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
(U) RDT&E	0.485	0.624	0.888	0.824	0.544	0.552	0.560	Cont.	Cont.
(U) PMC BLI# 301100	29.783	1.023	1.049	0.000	0.000	0.000	6.183	0.000	38.038

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4	0603635M Marine Corps Ground Combat/Supt Arms			C2112 Lightweight 155mm Howitzer (LW155)					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	13.446	18.085	11.633	5.970	0.000	0.000	0.000	0.000	49.134
RDT&E Articles Qty									
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(U) The LW155 is the replacement for the aging, operationally deficient M198 155 Howitzer for the Marine Corps and the Army. The LW155 retains the current M198 howitzer's range, but a significant weight reduction will significantly improve transportability and mobility by sea, air, and land platforms and enable the LW155 to emplace, displace, and bold shift in half the time of the current system while increasing the rate of fire. Thus, the LW155 provides greater transportability and mobility in strategic/tactical movements. The LW155 is a joint Marine Corps and Army program, with the Marine Corps as the Lead service. The Joint Operational Requirements Document (JORD) was approved by the Assistant Commandant of the Marine Corps on 27 June 1996. The JORD was validated and approved by the Army on 29 September 1995. A MS I/II Marine Corps Program Decision Memorandum (MCPDM) was approved on 5 February 1996.</p> <p>After a ten month "shoot-off" between competitors a three year EMD contract was signed with Cadillac Gage Textron Inc. on 17 March 1997. On 21 December 1998, the three parties involved in the development of the LW155 signed a novation agreement whereby Vickers Shipbuilding and Engineering Limited (VSEL) took over prime contractor responsibilities from Cadillac Gage Textron. The program will complete development in 4th quarter FY04 and enter limited rate production in FY 03. The Army's contribution to the program is a pre-planned product improvement consisting of a digital fire control system called "Towed Artillery Digitization" (TAD). The Army funds the research, development, and testing of TAD.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>(U) FY 2001 Accomplishments:</p> <ul style="list-style-type: none">• (U) \$ 2.350 Program Management Support.• (U) \$ 1.743 ARDEC matrix development engineering to system, logistics, safety, and quality assurance.• (U) \$ 5.597 EMD Contract increments to BAE Systems & KARA.• (U) \$ 0.400 Provide other govt development engineering support to logistics and quality assurance.• (U) \$ 2.547 Provide support to Multi-service Operational Test & Evaluation (MOT&E) – Marine travel costs, transportation, materials & Developmental Testing (DT).• (U) \$ 0.809 ARDEC (Benet Labs) Conduct engineering and fabrication of GFE Primer Feed Mechanism.• (U) \$ 0.000 EMD contract increment to BAE Forward Finance with FY 00 funds.• (U) \$ 0.000 Continued technical test series with FY 00 Forward Finance. <p>(U)Total \$ 13.446</p> <p>* NOTE: LW155 reduction of \$5m in FY 02 was erroneously applied to LAV Program.</p>									

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603635M Marine Corps Ground Combat/Supt Arms	C2112 Lightweight 155mm Howitzer (LW155)

(U) FY 2002 Planned Program:

- (U) \$ 1.735 Program Management Support.
- (U) \$ 0.800 ARDEC matrix development engineering to system, logistics, safety, and quality assurance.
- (U) \$ 6.750 EMD Contract (BAE Systems)
- (U) \$ 1.100 Joint Operational Assessment
- (U) \$ 0.800 Yuma Proving Ground developmental testing
- (U) \$ 0.800 Integration of Army P3I TAD onto LW155.
- (U) \$ 1.100 Pre-production Planning/Manufacturing/Integration.

(U)Total \$ 13.085

(U) FY 2003 Planned Program:

- (U) \$ 2.633 Integration of Army P3I TAD onto LW155
- (U) \$ 3.000 EMD Contract Test Support (BAE Systems)
- (U) \$ 6.000 Complete developmental testing pilot production guns

(U)Total \$ 11.633

Project Change Summary

	FY 2001	FY 2002	FY 2003
(U) FY2002 President's Budget	12.998	18.203	
(U) Adjustments to Previous President's Budget			
SBIR/STTR Transfer	(0.172)		
Minor Affordability Adjustments		(0.118)	
Program Adjustment	0.620		
Execution Adjustment		(5.000)	
(U) FY2003 President's Budget	13.446	13.085	11.633

CHANGE SUMMARY EXPLANATION:

(U) Funding: See Above.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

CLASSIFICATION:

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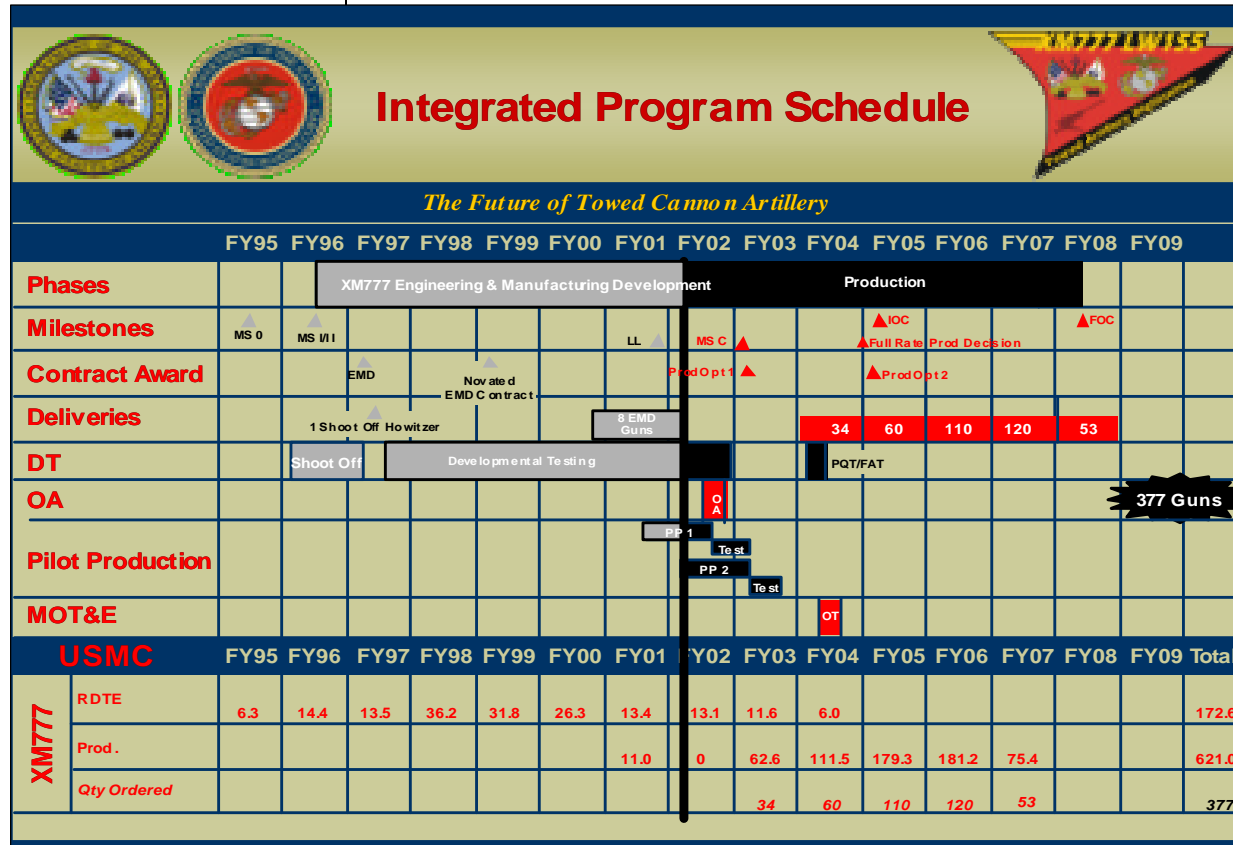
EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME							
RDT&E, N / BA-4	0603635M Marine Corps Ground Combat/Supt Arms	C2112 Lightweight 155mm Howitzer (LW155)							
B. (U) OTHER PROGRAM FUNDING SUMMARY:									
Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
(U) PMC, BLI #218500, Howitzer, Medium Towed 155MM	11.004	0.000	62.643	111.489	179.325	181.183	75.363	0.000	621.007
(U) Related RDT&E: PE 0604854A (Artillery Systems-Engineering Development)									
(U) C. ACQUISITION STRATEGY: The contract type initially was a Cost Plus Incentive Fee w/an Award Fee provision (CPIF/AF) for the EMD phase and was restructured to a CPIF in Dec 00 (Retroactive to Jun 00). Contract type is Fixed Price Incentive with Successive Targets (FPI-Successive) for the production options.									

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME 0603635M Marine Corps Ground Combat/Supt Arms	PROJECT NUMBER AND NAME C2112 Lightweight 155mm Howitzer (LW155)
RDT&E, N / BA-4		

(U) D. SCHEDULE PROFILE:



R-1 SHOPPING LIST - Item No. 69

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Exhibit R-2, RDTE,N Budget Item Justification
(Exhibit R-2, page 9 of 29)

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603635M Marine Corps Ground Combat/Supt Arms			C2112 Lightweight 155mm Howitzer (LW155)						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
Primary Hardware Dev	CPIF	BAE Systems, UK	31.869	5.597	02/01	6.750		0.000		0.000	44.216	
Ancillary Hardware Dev	CPIF	Kara, Bedford, PA	2.920	0.000	01/01	0.000		0.000		0.000	2.920	
Award Fees	CPIF	BAE Systems, UK	0.316	0.000		0.000		0.000		0.000	0.316	
TAD Integration	CPIF	BAE Systems, UK	0.000	0.000		0.800		2.633		0.000	3.433	
Mfg & Integr for Risk Mitig	CPIF	BAE Systems, UK	0.000	0.000		1.100		0.000		0.000	1.100	
GFE	MIPR	Benet Labs Watervliet Arsenal NY	13.441	0.809		0.000		0.000		0.000	14.250	
Govt Dev Eng	MIPR	ARDEC	10.033	1.743		0.800		0.000		0.000	12.576	
Govt Dev Eng	MIPR	Misc	9.484	0.400		0.000		0.000		0.000	9.884	
Subtotal Product Dev			68.063	8.549		9.450		2.633		0.000	88.695	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support												
SBIR	TBD	TBD	0.000	0.000		0.000		0.000		0.000	0.000	
Support Contracts	Contract	Various	2.699	0.000		0.000		0.000		0.000	2.699	
Subtotal Support			2.699	0.000		0.000		0.000		0.000	2.699	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603635M Marine Corps Ground Combat/Supt Arms			C2112 Lightweight 155mm Howitzer (LW155)						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test & Eval (T&E)												
Developmental Test & Eval	MIPR	Yuma Proving Ground, Yuma, AZ	6.977	1.497		0.800		6.000		0.000	15.274	
Developmental Test & Eval	MIPR	Misc. Government	3.432	0.000		0.000		0.000		0.000	3.432	
Operational Assessment	MIPR	Misc. Government	0.000	0.000		1.100		0.000		0.000	1.100	
Operational Test & Eval	MIPR	MCOTEA	0.051	1.050		0.000		0.000		5.970	7.071	
Test Support	CPIF	BAE Systems, UK	0.000	0.000		0.000		3.000		0.000	3.000	
Subtotal T&E			10.460	2.547		1.900		9.000		5.970	29.877	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Mngmnt												
Program Mngmnt	MIPR	PMO LW155, Picatinny, NJ	12.377	2.350		1.735		0.000		0.000	16.462	
Subtotal Management			12.377	2.350		1.735		0.000		0.000	16.462	
Remarks:												
Total Cost			93.599	13.446		13.085		11.633		5.970	137.733	

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation	PROGRAM ELEMENT NUMBER AND NAME 0603635M Marine Corps Ground Combat/Supt Arms			PROJECT NUMBER AND NAME C2256 Integrated Infantry Combat System (IICS)					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	2.462	1.728	1.779	1.799	1.814	1.697	1.730	Cont	Cont
RDT&E Articles Qty									
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>(U) The program will enhance the Marine Rifle Squad's battlefield capabilities through the development, optimization, and integration of an assortment of Marine systems/components and technologies into a cohesive, timely and combat effective system. These systems/components include weapon, integrated helmet assembly, protective clothing, communication and target acquisition technologies. This will provide the infantryman with increased lethality, survivability and situational awareness enhancements. Initial funding in this line will be utilized to determine and exploit integration opportunities on existing infantry equipment that will be fielded in the near future. Funds will also be utilized for the Research & Development of a future integrated system that is modular in design that will enhance the infantryman's mobility, lethality, survivability and communications. The IICS is an overarching program, consisting of three main phases. The initial phase enables base-lining current systems. The second phase consists of an iterative process integrating mid-term capabilities, and the final phase seeks technology insertions where opportunities exist.</p> <p>PROGRAM ACCOMPLISHMENTS AND PLANS</p> <p>FY 2001 Accomplishments</p> <ul style="list-style-type: none"> • (U) \$ 1.704 Congressional Plus-up for Advanced Modeling and Simulation (M&S) – was awarded following contractual competition. • (U) \$ 0.040 Prototype developed by Soldier Biological Chemical Command (SBCCOM) Natick, MA working integration issues with the development of combat gear. • (U) \$ 0.112 Scenario developed for representative MV-22 Heliborne Assault and subsequent Infantry Operations. • (U) \$ 0.606 Studies, analysis and support services conducted for phase one activities. <p>(U) Total \$ 2.462</p> <p>FY 2002 Planned Program</p> <ul style="list-style-type: none"> • (U) \$ 0.135 Prototype development by SBCCOM Natick, MA working integration issues with developing items of combat gear. • (U) \$ 0.150 Scenario development for representative AAV Surface Assault and subsequent Infantry Operations. • (U) \$ 0.305 Program management , specialized engineering and technical support • (U) \$ 0.288 Expeditionary Environment Studies (Nuclear Biological and Chemical, Mountain, Jungle, Extreme Cold Weather, Military Operations in Urban Terrain) • (U) \$ 0.850 Integration Development & Experimentation – R&D Integration of Command, Control, Communications, Computer, and Intelligence systems with weapons systems and load carriage equipment. Assessment of Land Warrior system in addressing these integration concerns <p>(U) Total \$ 1.728</p>									

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME						
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2256 Integrated Infantry Combat System (IICS)						
(U) FY 2003 Planned Program: <ul style="list-style-type: none"> • (U) \$ 0.150 Prototype development by SBCCOM Natick, MA working integration issues with developing items of combat gear. • (U) \$ 0.150 M&S Scenario Development continues to refine and validate vignettes for assessing IICS efforts. • (U) \$ 0.325 Program management , specialized engineering and technical support • (U) \$ 0.150 Infantry Battalion System Feasibility Study to assess IICS impacts on Weapons Platoons, Companies, and Infantry Battalions. • (U) \$ 1.004 Integration Development, & Experimentation – Refinement of developmental integration in preparation of fielding initial integrated capability for FY 05. Includes C4I, Combat Equipment, and Lethality enhancements to create an initial integrated system capability. 								
(U)Total \$ 1.779								
PROJECT CHANGE SUMMARY:								
	FY2001	FY2002	FY2003					
(U) FY 2002 President's Budget:	2.581	1.743						
(U) Adjustments from the President's Budget:								
(U) SBIR/STTR Transfer	-0.053							
(U) Execution Adjustment								
(U) Minor Affordability Adjustment								
(U) Program Adjustment	-0.066	-0.015						
(U) FY 2003 President's Budget:	2.462	1.728	1.779					
CHANGE SUMMARY EXPLANATION:								
(U) Funding: See Above.								
(U) Schedule: Not Applicable.								
(U) Technical: Not Applicable.								
(U) B. OTHER PROGRAM FUNDING SUMMARY:								
<u>Line Item No. & Name</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost
Not Applicable.								
(U) Related RDT&E:								
(U) PE 0602131M (Marine Corps Landing Force Technology)								
(U) PE 0603640M (Marine Corps Advanced Technology Demonstration)								
(U) PE 64657A ((US Army Land Warrior Program)								
(U) C. ACQUISITION STRATEGY: * An explanation of acquisition, management, and contracting strategies shall be provided for each project.								
The Intergrated Infantry Combat System envisions a phased approach of enhancements to the rifle squad with an endstate of synergizing that squad as a "system." Modularity and integration are paramount design factors. We can manage the risks associated with technology creep and cost by 1) improving the equipment and making it modular in form, 2) integrating these individual improvements into the squad as a whole, and 3) completing this via a phased approach.								
(U) D. SCHEDULE PROFILE: Not Applicable.								

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: October 2001						
APPROPRIATION/BUDGET ACTIVITY RDTE, N/BA-4 Dem/Val			PROGRAM ELEMENT 0603635M MC Ground Combat/Supt Arms			PROJECT NUMBER AND NAME C2256 Integrated Infantry Combat System						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	MIPR	Batelle Corp., Columbus, OH	0.082	0.112	10/00	0.150	11/01	0.150	11/02	0.000	0.494	
Product Development	MIPR	SBCCOM, NATICK	0.085	0.040	01/01	0.135	12/01	0.150	10/02	Continuing	Continuing	
Product Development	MIPR	SAIC, Corp	0.297	0.152	10/00	0.263	12/01	0.150	10/02	Continuing	Continuing	
Product Development	RCP	MCSC Contracts	0.000	1.704	05/01	0.850	10/01	1.004	12/02	Continuing	Continuing	
Subtotal Product Dev			0.464	2.008		1.398		1.454		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUPPORT												
Program Support	WR	NSWC DALGREN	0.000	0.224	03/01						0.224	
Program Support	RCP	ALS, Inc.	0.136							0.000	0.136	
Program Support	RCP	Bae, Inc.	0.000	0.136	10/00	0.225	10/01	0.220	10/02	Continuing	Continuing	
Subtotal Support			0.136	0.360		0.225		0.220			0.721	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Eval											0.000	
Operational Test & Eval											0.000	
Tooling											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Prog Mgmt Spt	RCP	Bae, Inc.	0.000	0.068	10/00	0.075	10/01	0.075	10/02	Continuing	Continuing	
Travel	WR	MCSC	0.030	0.026	10/00	0.030	10/01	0.030	10/02	Continuing	Continuing	
Subtotal Management			0.030	0.094		0.105		0.105		0.000	0.229	
Remarks:												
Total Cost				2.462		1.728		1.779		Continuing	Continuing	

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME			
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms					C2507 Family of Small Craft			
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	0.896	2.904	1.065	1.648	1.710	0.000	0.000	0.000	8.223
RDT&E Articles Qty									

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

(U) The Light Strike Craft (LSC) will be the primary mobility platform for Marine Small boat operations in support of Operational Maneuver From the Sea (OMFTS). The LSC will replace a portion of the Combat Rubber Reconnaissance Craft (CRRC) inventory.

(U) The Small Unit Riverine Craft (SURC) will provide tactical mobility as a troop carrier for elements of a Marine Air Ground Task Force (MAGTF) Ground Combat Element (GCE) in the Riverine Environment. The SURC will replace the Rigid Raiding Craft (RRC)

PROGRAM ACCOMPLISHMENTS AND PLANS

FY 2001 Planned Program

- (U) \$ 0.469 Continued Integration and Testing of Non Developmental Item (NDI) System Components / Performance & Functioning Testing.
- (U) \$ 0.000 Prepared plans for fabrication of Developmental Testing (DT) Prototype Craft / finalized Government Furnished Equipment Integration/ Design Fabrication of Gun Mount.
- (U) \$ 0.300 Conducted Business Case Analysis and Requirements Hierarchy
- (U) \$ 0.127 Continued Government Project Management Office support for the SURC Program.

(U) Total \$ 0.896

FY 2002 Planned Program

- (U) \$ 0.125 Design and test of mobility support equipment for use with the Landing Craft Air Cushioned (LCAC), CH-53 Helicopter, Sealift.
- (U) \$ 1.650 Fabrication of Operational Test (OT) Prototype craft.
- (U) \$ 1.054 Operational Test and Eval/ Certification and safety testing.
- (U) \$ 0.075 Program Support.

(U) Total \$ 2.904

(U) FY 2003 Planned Program:

- (U) \$ 0.105 Test LSC craft
- (U) \$ 0.888 Fabrication of LSC prototype/Developmental testing
- (U) \$ 0.072 Program Support

(U)Total \$ 1.065

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2507 Family of Small Craft

PROJECT CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	1.741	2.930	
(U) Adjustments from the President's Budget:			
(U) SBIR/STTR Transfer	-0.044		
(U) Execution Adjustment	-0.139		
(U) Minor Affordability Adjustment		-0.026	
(U) Program Adjustment	-0.662		
(U) FY 2003 PRESBUD Budget:	0.896	2.904	1.065

CHANGE SUMMARY EXPLANATION:
 (U) Funding: See Above.
 (U) Schedule: Not Applicable.
 (U) Technical: Not Applicable.

(U) B. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost
(U) PMC BLI#643400 Amphib Raid Equip	0.000	2.319	22.295	26.439	13.956	13.461	12.284 Continuing	Continuing

(U) Related RDT&E: Not Applicable.

(U) C. ACQUISITION STRATEGY:

The acquisition strategy consists of a market survey to identify Off-The-Shelf / Non-Developmental Item baseline competitors. This will be followed by a release of desired capabilities/specifications and establishment of the trade space parameters. Curr

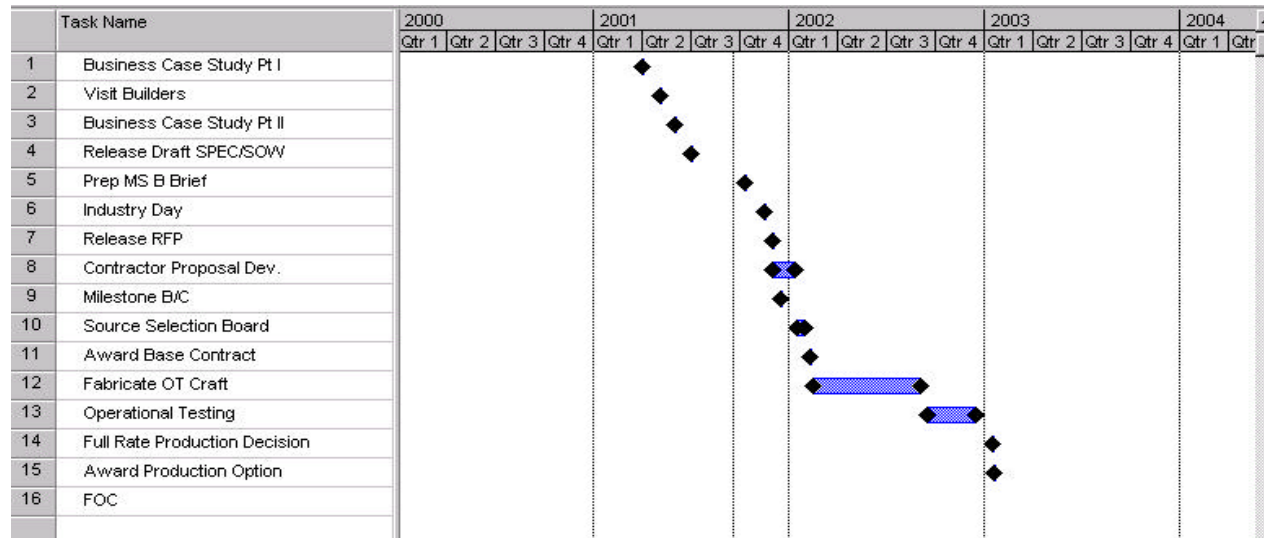
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2507 Family of Small Craft

(U) D. SCHEDULE PROFILE:

SURC



(Note: IOC occurs in FY 2003. FOC occurs in FY 2005.)

<u>Program Funding Summary</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007 To Compl</u>	<u>Total Cost</u>
<u>(APPN, BLI #, NOMEN)</u>								
(U) RDT&E,N	0.862	2.904	0.094	0.000	0.000	0.000	0.000	3.860
(U) PMC,BLI#643400,Amphib Raid Equip (SURC)	0.000	0.000	12.348	16.554	0.069	0.000	0.000	28.971

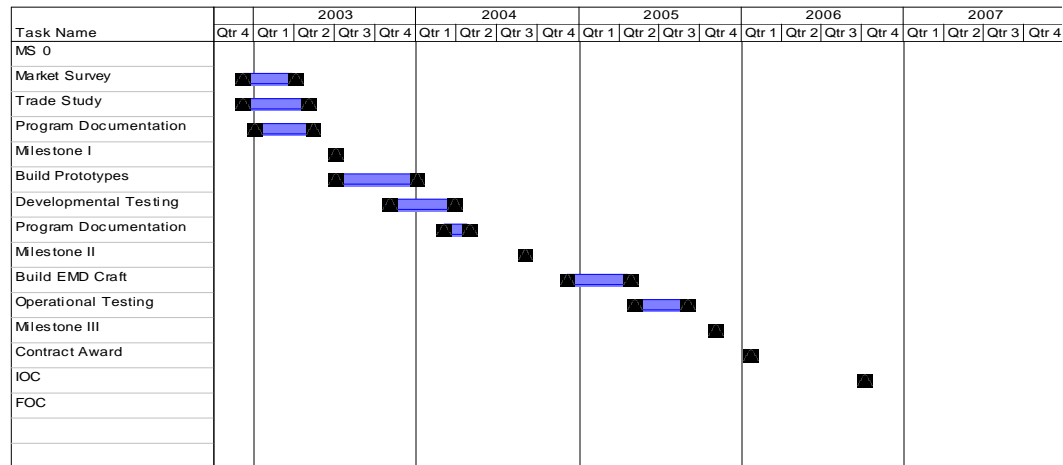
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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2507 Family of Small Craft

(U) D. SCHEDULE PROFILE:

LIGHT STRIKE CRAFT



<u>Program Funding Summary</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007 To Compl</u>	<u>Total Cost</u>
<u>(APPN, BLI #, NOMEN)</u>								
(U) RDT&E,N	0.000	0.000	0.971	1.648	1.710	0.000	0.000	4.329
(U) PMC,BLI#643400,Amphib Raid Eq (LSC)	0.000	0.000	0.000	0.000	0.000	5.653	5.596 Continuing	11.249

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDTE, N /BA-4 Dem/Val			PROGRAM ELEMENT 0603635M MC Ground Combat/Supt Arms			PROJECT NUMBER AND NAME C2507 Family of Small Craft						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PRODUCT DEV												
Primary Hardware Dev	TBD	TBD				1.655	10/01	0.888	10/02		2.543	
Ancillary Hardware Dev											0.000	
Systems Engineering	WR	NSWC Carderock, Suffolk, VA	1.227	0.572	10/00	0.175	10/01			Continuing	Continuing	
Systems Engineering	WR	NSWC Carderock, Suffolk, VA	0.075	0.235	10/00					Continuing	Continuing	
GFE	TBD					0.224	10/01				0.224	
Subtotal Product Dev			1.302	0.807		2.054		0.888		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUPPORT												
Development Support Equip											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support	RCP	BAE Inc., Triangle, VA	0.080	0.089	10/00	0.075	10/01	0.072	10/02	Continuing	Continuing	
Configuration Management											0.000	
Technical Data											0.000	
Subtotal Support			0.080	0.089		0.075		0.072		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDTE, N /BA-4 Dem/Val			PROGRAM ELEMENT 0603635M MC Ground Combat/Supt Arms			PROJECT NUMBER AND NAME C2507 Family of Small Craft						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
T&E												
Developmental Test & Eval	RCP	TBD						0.105	10/02		0.105	
Operational Test & Eval	WR	MCOTEA				0.475	03/02				0.475	
Developmental Test & Eval	WR	NSWC, Carderock, Suffolk, VA				0.300	10/01			Continuing	Continuing	
Subtotal T&E			0.000	0.000		0.775		0.105		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
MANAGEMENT												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost				0.896		2.904		1.065		Continuing	Continuing	

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME				
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms				C2508 Internally Transportable Vehicle (ITV)				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	4.125	3.965	1.989	0.000	0.000	0.000	0.000	0.000	10.079
RDT&E Articles Qty	8								

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

The Internally Transportable Vehicles (ITV) program was previously known as the Light Strike Vehicle (LSV) program. This project develops a joint MV-22 aircraft transportable family of light tactical, wheeled vehicles. The ITV's will provide reconnaissance units with a high mobility weapons platform. Follow-on variants will address logistics, command and control, medical and personnel movement missions. The ITV will replace the Fast Attack Vehicles (FAVs) currently employed throughout the Marine Air Ground Task Force (MAGTF).

PROGRAM ACCOMPLISHMENTS AND PLANS

FY 2001 Accomplishments

- (U) \$ 2.256 Completed Demonstration and Validation for FY 2000 and FY 2001 funds.
- (U) \$ 0.057 Provided In House program management and travel.
- (U) \$ 0.430 Provided Engineering and Logistic Support.
- (U) \$ 1.382 Conducted Automotive, Aircraft, Weapons, and Reliability testing.

(U) Total \$ 4.125

FY 2002 Planned Program

- (U) \$ 1.200 Research and engineering trade studies.
- (U) \$ 1.300 Conduct prototype and developmental testing.
- (U) \$ 0.915 Provide In house program management and travel.
- (U) \$ 0.550 Provide Engineering and Logistic Support.

(U) Total \$ 3.965

FY 2003 Planned Program

- (U) \$ 1.200 Research and engineering trade studies.
- (U) \$ 0.489 Provide In house program management and travel.
- (U) \$ 0.300 Provide Engineering and Logistic Support.

(U) Total \$ 1.989

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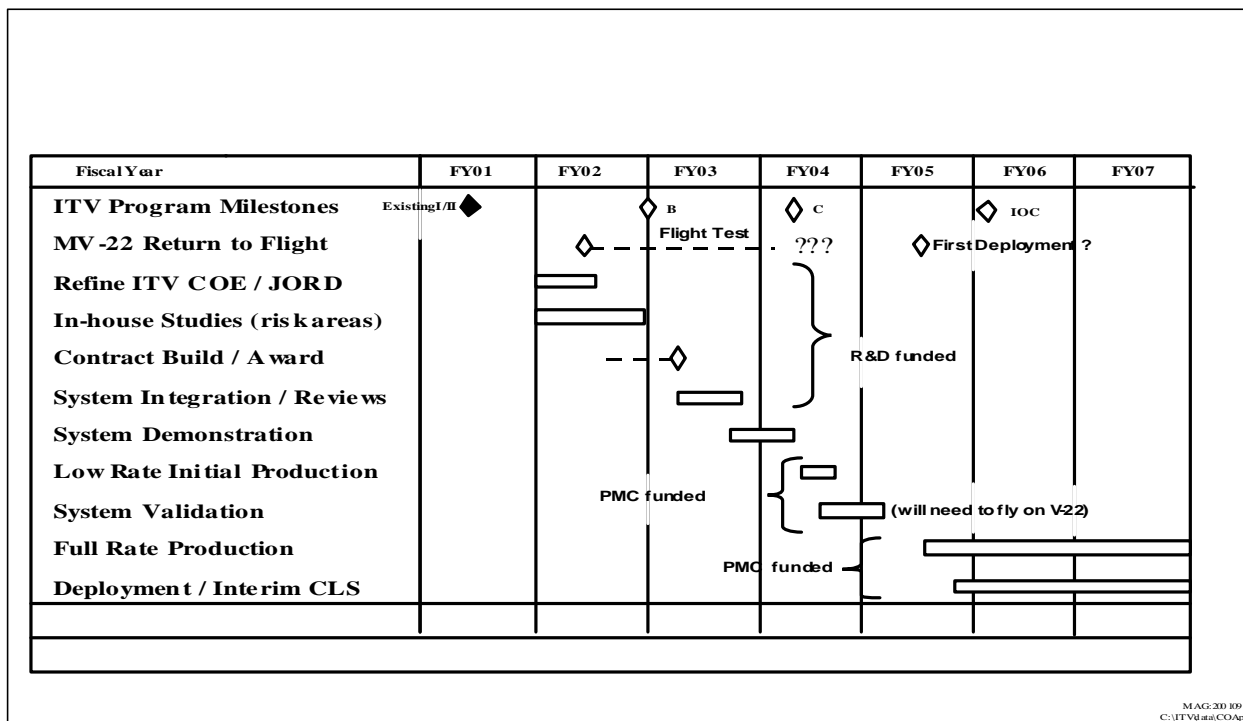
EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME			
RDT&E, N /BA-4 Demonstration/Validation		0603635M Marine Corps Ground Combat/Supt Arms				C2508 Internally Transportable Vehicle (ITV)			
PROJECT CHANGE SUMMARY:									
		FY2001	FY2002	FY 2003					
(U) FY 2002 President's Budget:		6.570	2.451						
(U) Adjustments from the President's Budget:									
(U) SBIR/STTR Transfer		-0.131							
(U) Execution Adjustment									
(U) Minor Affordability Adjustment			-0.035						
(U) Program Adjustment		-2.314	1.549						
(U) FY 2003 Presidents Budget:		4.125	3.965	1.989					
CHANGE SUMMARY EXPLANATION:									
(U) Funding: FY 2001 reflects a decrease of \$131K for SBIR and \$2.314K program adjustment. FY 2002 reflects a program adjustment of \$1.514K and FY 2003 reflects a program adjustment of \$1.989K.									
(U) Technical:									
(U) B. OTHER PROGRAM FUNDING SUMMARY:									
Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl		Total Cost
(U) PMC BLI# 654500 Family of ITV	0.000	0.000	0.000	3.969	7.986	8.641	8.242	Continuing	Continuing
(U) Related RDT&E: USSOCOM joint participation in ITV program – USSOCOM funding applied toward their mission specific vehicle variants.									
(U) C. ACQUISITION STRATEGY: The program is full and open competition, looking for the "best value" approach to satisfy the operational requirements. The program has both an Acquisition Strategy and an Acquisition Plan that addresses the total program fielding. Contractors delivered 8 prototype vehicles in FY01 for verification and performance testing. Follow- on research and testing will take place in FY02 as Concepts of Employment and operational requirements are refined, and the purchase of vehicles will begin in FY04.									

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2508 Internally Transportable Vehicle (ITV)

(U) D. SCHEDULE PROFILE:



Program Funding Summary (APPN, BLI #, NOMEN)

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
(U) RDT&E,N	4.125	3.965	1.989	0.000	0.000	0.000	0.000	0.000	10.079
(U) PMC BLI# 654500 Family of ITV	0.000	0.000	0.000	3.969	7.986	8.641	8.242	Continuing	Continuing

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N /BA-4 Dem/Val			0603635M MC Ground Combat/Supt Arms			C2508 Internally Transportable Vehicle (ITV)						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Dev											0.000	
Ancillary Hardware Dev											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Prototype Development	RCP	MCSC	4.200	2.254	02/01	0.000				0.000	6.454	
Subtotal Product Dev			4.200	2.254		0.000		0.000		0.000	6.454	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support Equip											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Development Support	WR	NSWC, Carderock	0.346	0.225	12/00	0.500	12/01	0.100	12/02	0.000	1.171	
Development Support	MIPR	WES Army Eng	0.075	0.050	12/00	0.000	12/01	0.100	12/02	0.000	0.225	
Aircraft Interface	WR	NAWC, AD	0.075	0.025	12/00	0.450	12/01	0.300	12/02	0.000	0.850	
Development Support	WR	NSWC Crane	0.035	0.030	12/00	0.100	12/01	0.200	12/02	0.000	0.365	
Structural Analysis	MIPR	TACOM (PM)	0.060	0.125	12/00	0.450	12/01	0.000	12/02	0.000	0.635	
Subtotal Support			0.591	0.455	12/00	1.500	12/01	0.700	12/02	0.000	3.246	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Dem/Val			PROGRAM ELEMENT 0603635M MC Ground Combat/Supt Arms			PROJECT NUMBER AND NAME C2508 Internally Transportable Vehicle (ITV)						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Eval											0.000	
Operational Test & Eval											0.000	
Tooling											0.000	
Reliability Testing	MIPR	APG, Test Center	0.050	1.089	12/00	0.500	12/01	0.200	12/02	0.000	1.839	
Developmental Test & Eval	WR	NAWC, AD	0.000	0.200	12/00	0.700	12/01	0.300	12/02	0.000	1.200	
Subtotal T&E			0.050	1.289		1.200		0.500		0.000	3.039	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Contractor Eng Suppt						0.325	12/01	0.300	12/01	0.000	0.625	
Govt Engineering Suppt						0.600	12/01	0.200	12/01	0.000	0.800	
Prog. Mgt, Spt, & Tvl			0.056	0.127		0.340	12/01	0.289	12/01	0.000	0.812	
Subtotal Management			0.056	0.127		1.265		0.789		0.000	2.237	
Remarks:												
Total Cost			4.897	4.125		3.965		1.989		0.000	14.976	

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms			C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	2.908	0.000	10.423	10.439	16.822	9.815	1.116	0.000	51.523
RDT&E Articles Qty						18 FCS/700 Rds			
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>Follow-on to the Shoulder-Launched Multi-Purpose Assault Weapon (FOTS) is an accurate, shoulder-fired, assault weapon designed to defeat a variety of targets on the battlefield. It consists of a launcher, sighting and fire control system, and projectile. FOTS will replace the Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) without loss of present capabilities while providing: 1) fire from enclosure capability, 2) reduced launcher signature, 3) increased lethality, 4) greater breaching effects, 5) lighter weight, 6) increased reliability, and 7) increased availability.</p> <p>PROGRAM ACCOMPLISHMENTS AND PLANS</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • (U) \$ 1.052 Continued Warhead Development/Risk Reduction (Wall Breaching Round & Thermobarics) • (U) \$ 0.035 Provided govt. Program Management / In-House Support. • (U) \$ 0.928 Provided govt. engineering and technical support. • (U) \$ 0.248 Provided funds for Low Signature Ejection Technology (LOSET) Propulsion Risk Reduction Effort • (U) \$ 0.645 Provided funds for Tri-mode fuze development • (U) \$ 0.000 \$1.295 Forward Financed activities from FY 00 to complete propulsion system technology (fire from enclosure) demonstration effort. <p>(U) Total \$ 2.908</p> <p>FY 2002 Planned Program: Not Applicable</p> <p>U) FY 2003 Planned Program:</p> <ul style="list-style-type: none"> • (U) \$ 5.700 System Integration Contracts • (U) \$ 1.504 Conduct Systems Testing and Evaluations in support of Source Selection for Phase B • (U) \$ 0.729 Provide govt. Program Management / In-House Support • (U) \$ 0.990 Provide govt. engineering and technical support • (U) \$ 0.550 Wall Breaching Round Technology Demonstration • (U) \$ 0.950 Tri-Mode Fuze Technology Demonstration <p>(U)Total \$ 10.423</p>									

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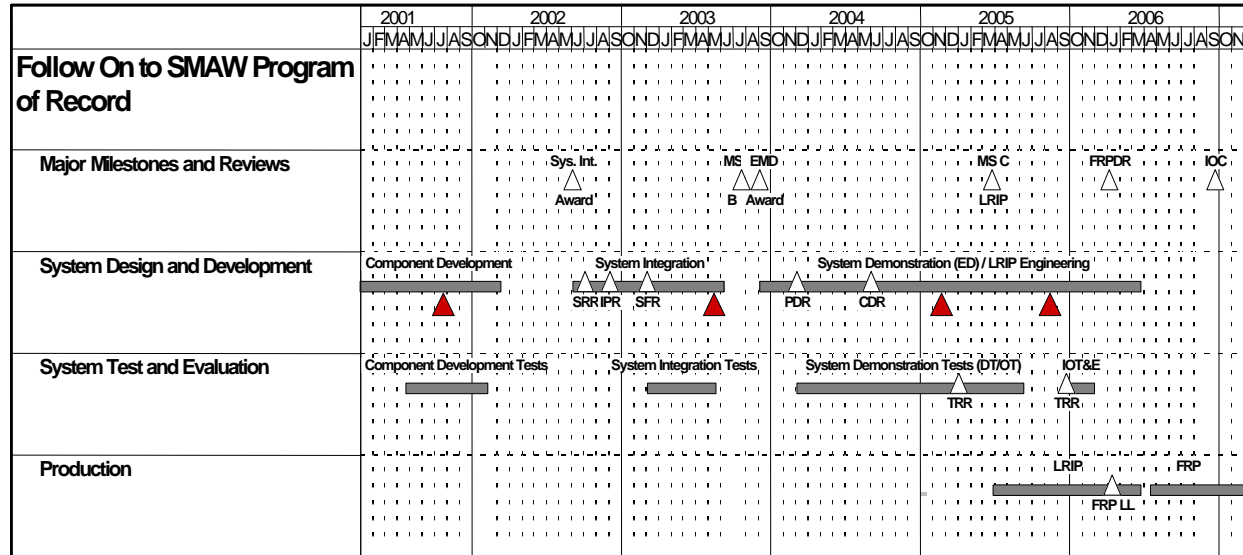
EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002																																				
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME																																					
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms			C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on																																					
<p>PROJECT CHANGE SUMMARY:</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">FY2001</th> <th style="text-align: right;">FY2002</th> <th style="text-align: right;">FY2003</th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: right;">2.972</td> <td style="text-align: right;">0.000</td> <td></td> </tr> <tr> <td>(U) Adjustments from the President's Budget:</td> <td></td> <td></td> <td></td> </tr> <tr> <td> (U) SBIR/STTR Transfer</td> <td style="text-align: right;">-0.064</td> <td></td> <td></td> </tr> <tr> <td> (U) Execution Adjustment</td> <td></td> <td></td> <td></td> </tr> <tr> <td> (U) Minor Affordability Adjustment</td> <td></td> <td></td> <td></td> </tr> <tr> <td> (U) Program Adjustment</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) FY 2003 PRESBUD Budget:</td> <td style="text-align: right;">2.908</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">10.423</td> </tr> </tbody> </table> <p>CHANGE SUMMARY EXPLANATION:</p> <p> (U) Funding: See Above.</p> <p> (U) Schedule: Not Applicable.</p> <p> (U) Technical: Not Applicable.</p>											FY2001	FY2002	FY2003	(U) FY 2002 President's Budget:	2.972	0.000		(U) Adjustments from the President's Budget:				(U) SBIR/STTR Transfer	-0.064			(U) Execution Adjustment				(U) Minor Affordability Adjustment				(U) Program Adjustment				(U) FY 2003 PRESBUD Budget:	2.908	0.000	10.423
	FY2001	FY2002	FY2003																																						
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<p>(U) B. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Line Item No. & Name</u></th> <th style="text-align: right;">FY 2001</th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> <th style="text-align: right;">FY 2004</th> <th style="text-align: right;">FY 2005</th> <th style="text-align: right;">FY 2006</th> <th style="text-align: right;">FY 2007 To Compl</th> <th style="text-align: right;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) PMC 220900; Mod Kits:Arty&Other</td> <td style="text-align: right;">3.470</td> <td style="text-align: right;">1.459</td> <td style="text-align: right;">4.890</td> <td style="text-align: right;">4.448</td> <td style="text-align: right;">10.584</td> <td style="text-align: right;">18.705</td> <td style="text-align: right;">96.283</td> <td style="text-align: right;">Continuing Continuing</td> </tr> </tbody> </table>										<u>Line Item No. & Name</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost	(U) PMC 220900; Mod Kits:Arty&Other	3.470	1.459	4.890	4.448	10.584	18.705	96.283	Continuing Continuing														
<u>Line Item No. & Name</u>	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost																																	
(U) PMC 220900; Mod Kits:Arty&Other	3.470	1.459	4.890	4.448	10.584	18.705	96.283	Continuing Continuing																																	
<p>(U) Related RDT&E: Not Applicable.</p>																																									
<p>(U) C. ACQUISITION STRATEGY:</p> <p>The acquisition strategy for Follow-On-To-Shoulder-Launched Multi-Purpose Assault Weapon (FOTS) represents a fundamental shift from the traditional military systems acquisition paradigm in which external market demand is leveraged by offering a fully developed system to external markets. Rather, the market place will influence the determination of the ultimate design of the weapon in order to capitalize on an expanded customer base to facilitate interoperability and achieve economies of scale. The concept and technology phase will be sole source, cost plus fixed fee in order to utilize funding provided through Congressional Enhancement funding. System development and demonstration phase will be full and open competition, cost plus fixed fee.</p>																																									

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Demonstration/Validation	0603635M Marine Corps Ground Combat/Supt Arms	C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on
(U) D. SCHEDULE PROFILE:		

FOLLOW ON TO SMAW (FOTS)



<u>Program Funding Summary</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Compl</u>	<u>Total Cost</u>
(U) RDT&E,N	2.908	0.000	10.423	10.439	16.822	9.815	1.116	0.000	51.523
(U) 220900; Mod Kits:Arty&Other	0.000	0.000	0.000	0.000	0.000	6.053	83.174	286.410	375.637

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Exhibit R-3 Cost Analysis							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT			PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Dem/Val				0603635M MC Ground Combat/Supt Arms			C2614 SMAW Follow-on					
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	SS/CPAF	CMS Defense Systems, Titusville, FL	2.600	1.400	12/00	0.000		0.000		0.000	4.000	
Product Development	SS/CPAF	InvenCom Inc., Charlotte, NC	1.300	0.000	01/00	0.000		0.000		0.000	1.300	
Product Development	SS/CPAF	Raphael, USA	0.000	0.600	06/01	0.000		0.000		0.000	0.600	
Product Development	C/CPAF	TBD Contractor X 3		0.000		0.000		5.700	10/02	Continuing	Continuing	
Product Development	C/CPAF	TBD Contractor						0.950	10/02	Continuing	Continuing	
Subtotal Product Dev			3.900	2.000		0.000		6.650		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Integrated Logistics Support		TBD						0.100	10/03		0.100	
Configuration Management		TBD						0.200	10/03		0.200	
Technical Data		TBD						0.200	10/03		0.200	
Program Support	WR	NSWC, Dahlgren, VA	2.207	0.370	12/00	0.000		0.000		0.000	2.577	
Program Support	WR	NAVSEA	0.073	0.428	12/00	0.000		0.990	10/03	Continuing	Continuing	
Program Support	C/IDIQ	Telecolote Inc., Huntsville, AL	0.124	0.000		0.000		0.050	05/03	0.000	0.174	
Program Support	C/CPIF	ALS, Inc. Dumfries, VA	0.027	0.000		0.000		0.000		0.000	0.027	
Program Support	C/FFP	BAE Systems, Stafford, VA	0.000	0.000		0.000		0.400	10/03	0.000	0.400	
Subtotal Support			2.431	0.798		0.000		1.940		0.000	5.169	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
T&E												
Developmental Test & Eval		TBD						1.104	05/03		1.104	
Subtotal T&E			0.000	0.000		0.000		1.104		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Management Support	WR	MCSC, Quantico, VA (TAD)	0.296	0.110	10/00	0.000		0.729	10/03	0.000	1.135	
Subtotal Management			0.296	0.110		0.000		0.729		0.000	1.135	
Remarks:												
Total Cost				2.908		0.000		10.423		Continuing	Continuing	

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST AND EVALUATION, NAVY/BA-4					Joint Service EOD Development/0603654N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007		Cost to Complete	Total Cost
Total PE Cost	13.994	12.803	12.877	12.275	11.575	11.806	12.043		Cont.	Cont.
Joint Service EOD Systems/Q0377/Q2867	7.022	6.015	6.120	6.268	6.405	6.534	6.664		Cont.	Cont.
EOD Diving System/Q1317	6.972	6.788	6.757	6.007	5.170	5.272	5.379		Cont.	Cont.
Quantity of RDT&E Articles	Various	Various	Various	Various	Various	Various	Various			
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 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.										
(U) Program Change Summary										
				FY 2001		FY 2002		FY 2003		
FY 2002 President's Budget:				14.546		12.918		13.171		
Appropriated Value:				14.681		12.918				
Adjustments to FY 2001/2002										
Appropriated Value/FY2002										
President's Budget:										
a. SBIR Adjustment				-0.353						
b. General Adjustments				-0.334		-0.115		-0.294		
FY 2003 Pres Budget Submit:				13.994		12.803		12.877		
Funding: FY01 - (-\$0.687M) SBIR and Undistributed Reductions, FY02 - (-\$0.115M) Management Reform Initiative, FY03 - (-\$0.294M) Other Adjustments.										
Schedule:										
Q0377 - The final AOA for the EOD ISC4 System was reviewed by the Resource Sponsor/Requirements Officer and it was determined that the project for FY01/FY02 would not be executed. By the direction of the Requirements Officer, the funding was distributed to higher priority projects.										
Q1317 - After a review of the Advanced Underwater Breathing Apparatus project, it was determined that the project was not ready for execution in FY02. The funding will be used to obtain a production decision for the Underwater Imaging System. This project had a slip in the production decision from 4th QTR FY01 to 3rd QTR FY02 due to obsolete electronic parts.										
Technical: Not applicable										

R-1 SHOPPING LIST - Item No. 70 - 1 of 70 - 19

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 19)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, N/BA-4	JT Service EOD Development/0603654N				JT Service EOD Systems/Q0377					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007		Cost to Complete	Total Cost
Project Cost	7.022	6.015	6.120	6.268	6.405	6.534	6.664		Cont.	Cont.
RDT&E Articles Qty	Various	Various	Various	Various	Various	Various	Various			

A. Mission Description and Budget Item Justification: Provides Explosive Ordnance 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).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY2001 ACCOMPLISHMENTS:

(\$1.900) Obtained approval for full rate production for Small Caliber Dearmer project and the Standoff Disrupter UXO and Standoff Disrupter IED projects.

(\$3.126) Continued development of Large IED Access & Disruption, and Classified Project II.

(\$.500) Conducted Analysis of Alternatives studies in the areas of submunitions clearance and hand held ordnance locator (Advanced Ordnance Locator).

(\$1.496) Cong Add - Developed and tested improvements to the Remote Ordnance Neutralization System (RONS).

2. FY 2002 PLAN:

(\$2.800) Continue Classified Project II, and Large IED Access & Disruption projects.

(\$2.715) Initiate Advanced Ordnance Locator (AOL), Non-invasive Filler Identification (NFI), and EOD Man Portable Robotic System (MPRS) projects.

(\$.500) Conduct Analysis of Alternative studies in the area of submunitions clearance. Conduct evaluations of Commercial/Non-Developmental Item (C/NDI) EOD tools & equipment.

3. FY 2003 PLAN:

(\$5.120) Continue Classified Project II, Large IED Access & Disruption, NFI, EOD MPRS, and AOL projects.

(\$.400) Initiate the Submunitions Clearance project.

(\$.600) Conduct Analysis of Alternative studies and evaluations of C/NDI EOD tools and equipment.

R-1 SHOPPING LIST - Item No. 70 - 2 of 70 - 19

Exhibit R-2a, RDT&E Project Justification**UNCLASSIFIED**

(Exhibit R-2a, page 2 of 19)

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002																																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER JT Service EOD Development 0603654N	PROJECT NAME AND NUMBER JT Service EOD Systems/Q0377																																					
<p>B. Other Program Funding Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;"></th> <th style="width: 7.5%;">FY 2001</th> <th style="width: 7.5%;">FY 2002</th> <th style="width: 7.5%;">FY 2003</th> <th style="width: 7.5%;">FY 2004</th> <th style="width: 7.5%;">FY 2005</th> <th style="width: 7.5%;">FY 2006</th> <th style="width: 7.5%;">FY 2007</th> <th style="width: 7.5%;">To Complete</th> <th style="width: 7.5%;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>OPN 5509</td> <td style="text-align: center;">1.488</td> <td style="text-align: center;">0.537</td> <td style="text-align: center;">1.064</td> <td style="text-align: center;">1.220</td> <td style="text-align: center;">1.520</td> <td style="text-align: center;">2.250</td> <td style="text-align: center;">2.050</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> <tr> <td>PANMC 0340</td> <td style="text-align: center;">0.563</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.797</td> </tr> </tbody> </table> <p>C. 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.</p> <p>For the Large IED Access & Disruption there is a dual acquisition strategy; an acquisition sub-project for commercially available Large IED tools and a full-scale development sub-project. Within each of these sub-projects there will be two tools pursued.</p> <p>D. Schedule Profile: See Attached.</p>											FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost	OPN 5509	1.488	0.537	1.064	1.220	1.520	2.250	2.050	CONT.	CONT.	PANMC 0340	0.563							0.000	0.797
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EXHIBIT R-2a, RDT&E Project Justification																				DATE:								
February 2002																												
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NAME AND NUMBER										PROJECT NAME AND NUMBER													
RDT&E, N/BA-4					JT Service EOD Development 0603654N										JT Service EOD Systems/Q0377													
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																												
RDT&E Milestone Chart																												
FY 2001				FY 2002				FY 2003				FY 2004				FY 2005				FY 2006				FY 2007				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CLASSIFIED PROJECT II																												
Testing																												
Interim Program Review (IPR)																												
EDM Fabrication																												
Testing (DT-II)																												
Production Decision																												
Production/Deliveries																												
SMALL CAL DEARMER (SCD)																												
Testing (Final)																												
Production Decision																												
Production / Deliveries																												

R-1 SHOPPING LIST - Item No.70 - 4 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 19)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification																				DATE:							
																				February 2002							
APPROPRIATION/BUDGET ACTIVITY					PROGRAM ELEMENT NAME AND NUMBER										PROJECT NAME AND NUMBER												
RDT&E, N/BA-4					JT Service EOD Development 0603654N										JT Service EOD Systems/Q0377												
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																											
RDT&E Milestone Chart																											

R-1 SHOPPING LIST - Item No. 70 - 5 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 19)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification																DATE:																
February 2002																																
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER								PROJECT NAME AND NUMBER																				
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1234					1234				1234				1234				1234				1234				1234							
ADVANCED ORDNANCE LOCATOR																																
Analylsis of Alternatives (AOA) Study																																
Program Initiation					▲																											
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NON-INVASIVE FILLER ID																																
Program Initiation					▲																											
Testing (Preliminary)																																
Testing (Final)																																
Production Decision													▲																			
Production																																

R-1 SHOPPING LIST - Item No. 70 - 6 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6 of 19)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification																				DATE:											
																				February 2002											
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER										PROJECT NAME AND NUMBER																	
RDT&E, N/BA-4				JT Service EOD Development 0603654N										JT Service EOD Systems/Q0377																	
0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems																															
RDT&E Milestone Chart																															
FY 2001				FY 2002				FY 2003				FY 2004				FY 2005				FY 2006				FY 2007							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
EOD MAN PORTABLE ROBOTIC SYSTEM																															
Program Initiation								▲																							
Testing (Preliminary)												■																			
Testing (Final)												■																			
Production Decision																▲															
Production																■				■				■							
SUBMUNITIONS CLEARANCE																															
Analysis of Alternatives (AOA) Study				■				■																							
Program Initiation												▲																			
Testing (Preliminary)												■				■															
Testing Final																■				■											
Production Decision																				▲											
Production																								■				■			

R-1 SHOPPING LIST - Item No. 70 - 7 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 19)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			0603654N			Joint Service EOD Systems/Q0377						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTD, IH, MD	74.051	3.338	10/00	2.053	10/01	1.712	10/02	Continuing	Continuing	N/A
Software Development	WR	EODTD, IH, MD	3.304	0.075	10/00			0.150	10/02	Continuing	Continuing	N/A
ILS	WR	EODTD, IH, MD	34.270	0.850	10/00	0.900	10/01	0.950	10/02	Continuing	Continuing	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			111.625	4.263		2.953		2.812		Continuing	Continuing	N/A
Remarks:												
Program Management Support	C/CPFF	Dynamic Systems, Alex, VA	2.680	0.250	01/01	0.260	01/02	0.270	01/03	Continuing	Continuing	N/A
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			2.680	0.250		0.260		0.270		0.000	3.460	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 70 - 8 of 70 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 19)

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			0603654N			Joint Service EOD Systems/Q0377						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	EODTD, IH, MD	51.158	1.895	10/00	1.650	10/01	1.870	10/02	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	EODTD, IH, MD	8.245								0.000	N/A
											0.000	
											0.000	
Subtotal T&E			59.403	1.895		1.650		1.870		Continuing	Continuing	N/A
Remarks:												
Program Management Personnel	WR	EODTD, IH, MD	3.445	0.225	10/00	0.250	10/01	0.250	10/02	Continuing	Continuing	N/A
Miscellaneous	Various	Various	2.295	0.389	02/01	0.902	02/02	0.918	02/03	Continuing	Continuing	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			5.740	0.614		1.152		1.168		Continuing	Continuing	N/A
Remarks:												
Total Cost			179.448	7.022		6.015		6.120		Continuing	Continuing	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 70 - 9 of 70 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 9 of 19)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification								DATE:		February 2002	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER JT Service EOD Development/0603654N				PROJECT NAME AND NUMBER EOD Diving Systems/Q1317					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007		Cost to Complete	Total Cost
Project Cost		6.972	6.788*	6.757	6.007	5.170	5.272	5.379		Cont.	Cont.
RDT&E Articles Qty		Various	Various	Various	Various	Various	Various	Various			
<p>* ERF,D Funding \$2.200</p> <p>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. Provides support for the Navy's high priority mission of Very Shallow Water (VSW) mine countermeasures, including clandestine reconnaissance, in support of amphibious operations. This also includes the development of small, affordable MCM Unmanned Underwater Vehicles.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY2001 ACCOMPLISHMENTS:</p> <p>(\$.221) Tested & gained approval for Navy use (ANU) of EOD diving, Commercial/Non-Developmental Items (C/NDI).</p> <p>(\$.920) Continued development of a non-magnetic Acoustic Firing System.</p> <p>(\$.709) Continued the development of the Underwater Imaging System.</p> <p>(\$.535) Completed the development of diving tables for the MK 16 MOD 0 Underwater Breathing Apparatus.</p> <p>(\$.083) Conducted Analysis Of Alternatives for equipment to enhance the divers ability to detect, neutralize and gather intelligence on underwater limpet and special attach mines.</p> <p>(\$4.504) Continued to develop, test and gain approval for fleet use of specialized equipment to support the Very Shallow Water Mine Countermeasures mission and CNO approved VSW MCM Detachment (USN/USMC). This also includes the development of small, affordable MCM Unmanned Underwater Vehicles Systems & UUV Modules for VSW MCM & EOD Detachments.</p>											

R-1 SHOPPING LIST - Item No. 70- 10 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 10 of 19)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER JT Service EOD Development/0603654N	PROJECT NAME AND NUMBER EOD Diving Systems/Q1317
<p>2. FY2002 PLAN:</p> <p>(\$.218) Continue to test & gain approval for Navy use (ANU) of EOD diving, Commercial/Non-Developmental Items (C/NDI).</p> <p>(\$.400) Obtain Milestone III decision for the Acoustic Firing System.</p> <p>(\$.579) Initiate development of Advanced Underwater Limpet Mine equipment to enhance EOD units' ability to detect neutralize and gather intelligence on underwater limpet and special attach mines.</p> <p>(\$.150) Obtain production decision for the Underwater Imaging System.</p> <p>(\$.600) Initiate development of low magnetic Micro Diver Display that provides sonar input from the Underwater Imaging Systems when in dark turbid, low visibility water environments.</p> <p>(\$.250) Initiate the test and evaluation and gain approval for production for a commercial off-the shelf Emergency Evacuation Diver System to assist the forward deployed EOD ARG/CV battle group for transportation of diving casualties.</p> <p>(\$.450) Initiate the development and test of a product improvement Advanced Miniature Mine PIP Sensor to the Underwater Imaging System to allow the system to conduct stand-off identification and computer aided detection and classification.</p> <p>(\$4.141) Continue to develop, test and gain approval for fleet use of specialized equipment to support the Very Shallow Water Mine Countermeasures mission and CNO approved VSW MCM Detachment (USN/USMC). This also includes the development of small, affordable MCM Unmanned Underwater Vehicles.</p> <p>2. FY2002 ERF,D PLAN:</p> <p>(\$2.200) ERF,D Test and evaluate UUVs to enhance the EOD force's underwater AT capability.</p> <p>3. FY2003 PLAN:</p> <p>(\$.237) Continue to test & gain approval for Navy use (ANU) of EOD diving, Commercial/Non-Developmental Items (C/NDI).</p> <p>(\$.400) Obtain a production decision for the Advanced Miniature Mine Sensor.</p> <p>(\$1.744) Continue the development of Advanced Underwater Limpet Mine Equipment, and obtain a production decision for the Micro Diver Display project.</p> <p>(\$.266) Initiate the development of an Active Thermal Protection System to support VSW and EOD MCM diving in cold water environments.</p> <p>(\$4.110) Continue the development of small, affordable MCM Unmanned Underwater Vehicles and associated sub-systems for use by the VSW MCM Detachment (USN/USMC) and EOD Detachments.</p>		

R-1 SHOPPING LIST - Item No. 70 - 11 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 11 of 19)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT NAME AND NUMBER JT Service EOD Development/0603654N			PROJECT NAME AND NUMBER EOD Diving Systems/Q1317			

B. Other Program Funding Summary

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
PANMC 0340		1.400	1.000						2.400
OPN 0975	3.211	4.484	0.000	3.493	7.616	24.649	21.645	Cont.	Cont.
OPN 5509	1.394	2.140	1.214						4.814

C.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.

D. Schedule Profile: See Attached.

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EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2002

APPROPRIATION/BUDGET ACTIVITY

PROGRAM ELEMENT NAME AND NUMBER

PROJECT NAME AND NUMBER

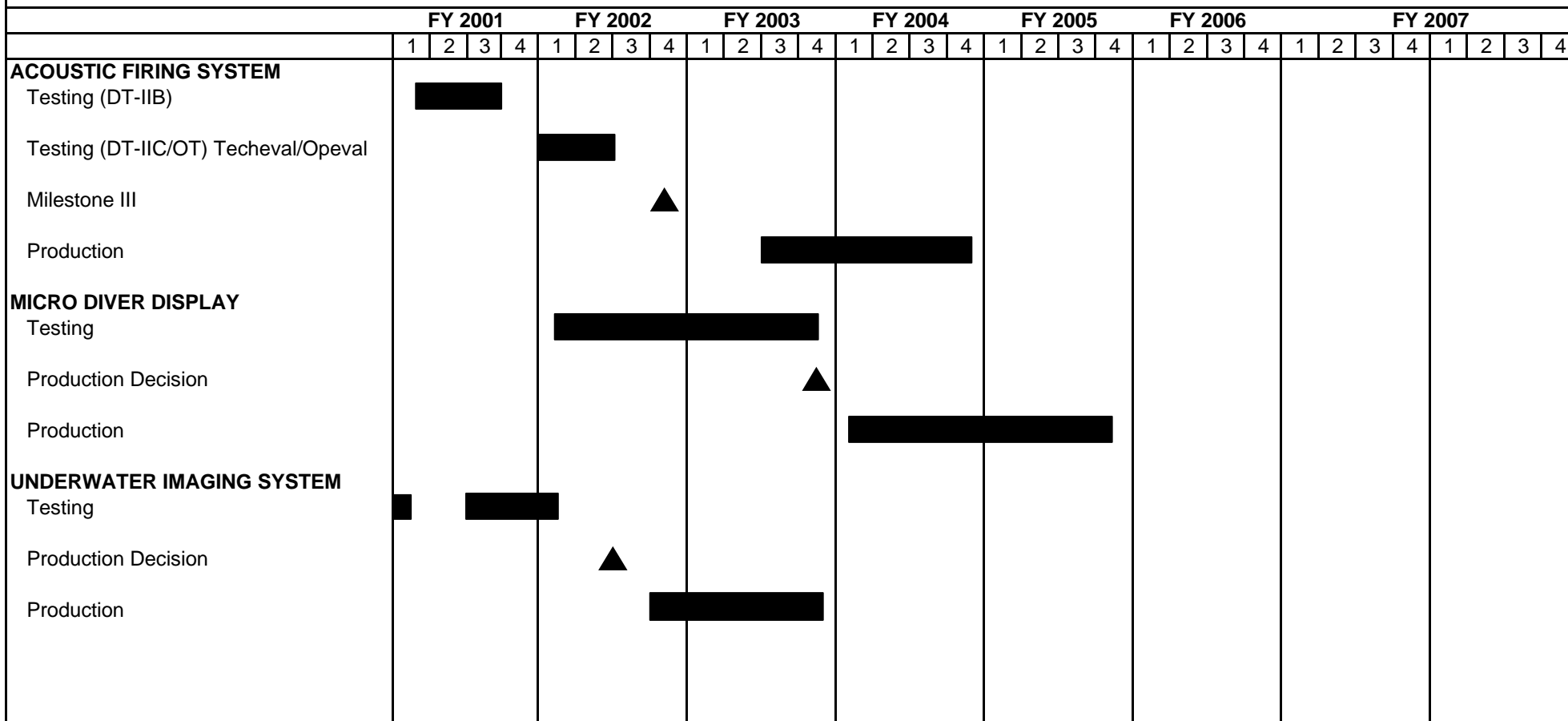
RDT&E, N/BA-4

JT Service EOD Development 0603654N

EOD Diving Systems/Q1317

0603654N Joint Service EOD Development; Q1317 EOD Diving Systems

RDT&E Milestone Chart



R-1 SHOPPING LIST - Item No. 70 - 13 of 70 - 19

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 13 of 19)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification																		DATE:											
February 2002																													
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER										PROJECT NAME AND NUMBER															
RDT&E, N/BA-4				JT Service EOD Development 0603654N										EOD Diving Systems/Q1317															
0603654N Joint Service EOD Development; Q1317 EOD Diving Systems																													
RDT&E Milestone Chart																													

R-1 SHOPPING LIST - Item No. 70 - 14 of 70 -19

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 14 of 19)

UNCLASSIFIED

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification																		DATE:																			
APPROPRIATION/BUDGET ACTIVITY																		February 2002																			
PROGRAM ELEMENT NAME AND NUMBER																		PROJECT NAME AND NUMBER																			
RDT&E, N/BA-4																		JT Service EOD Development 0603654N										EOD Diving Systems/Q1317									
0603654N Joint Service EOD Development; Q1317 EOD Diving Systems																																					
RDT&E Milestone Chart																																					
FY 2001										FY 2002				FY 2003				FY 2004				FY 2005				FY 2006				FY 2007							
	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					
ACTIVE THERMAL PROTECTION SYSTEM																																					
Testing																																					
Production Decision																		▲																			
Production																																					
VERY SHALLOW WATER																																					
Primary Hardware Development																																					
UNMANNED UNDERWATER VEHICLE																																					
Testing/User Evaluation																																					
Production Decision																		▲																			
Production																																					

R-1 SHOPPING LIST - Item No. 70 - 15 of 70 - 19

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 15 of 19)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			0603654N			EOD Diving Systems/Q1317						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	SPAWAR, SD, CA	3.630	0.770	10/00	0.200	10/01	0.200	10/02	Continuing	Continuing	N/A
Primary Hardware Development	WR	Various	16.430	2.734	10/00	3.020	10/01	3.293	10/02	Continuing	Continuing	N/A
Software Development	WR	Various	0.891	0.200	10/00	0.200	10/01	0.250	10/02	Continuing	Continuing	N/A
Systems Engineering	WR	Various	6.730	0.300	10/00	0.325	10/01	0.350	10/02	Continuing	Continuing	N/A
ILS	WR	Various	10.892	0.200	10/00	0.225	10/01	0.250	10/02	Continuing	Continuing	N/A
											0.000	
											0.000	
Subtotal Product Development			38.573	4.204		3.970		4.343		Continuing	Continuing	N/A
Remarks:												
Program Management Support	C/CPFF	Dynamic System, Alex, VA	2.286	0.450	01/01	0.450	01/02	0.351	01/03	Continuing	Continuing	N/A
											0.000	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			2.286	0.450		0.450		0.351		0.000	Continuing	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 70 - 16 of 70 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 16 of 19)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			0603654N			EOD Diving Systems/Q1317						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Various	2.320	0.400	10/00	0.400	10/01	0.350	10/02	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	Various	0.920	0.340	10/00	0.300	10/01			Continuing	Continuing	N/A
											0.000	
											0.000	
Subtotal T&E			3.240	0.740		0.700		0.350		0.000	Continuing	N/A
Remarks:												
Program Management Personnel	WR	EODTD, IH, MD	4.117	0.650	10/00	0.650	10/01	0.700	10/02	Continuing	Continuing	N/A
Miscellaneous	Various	Various	1.688	0.928	02/01	1.018	02/02	1.013	10/02	Continuing	Continuing	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			5.805	1.578		1.668		1.713		Continuing	Continuing	N/A
Remarks:												
Total Cost			49.904	6.972		6.788		6.757		Continuing	Continuing	N/A
Remarks:												

R-1 SHOPPING LIST - Item No. 70 - 17 of 70 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 17 of 19)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/ERF,D			0603654N			EOD Diving Systems/Q1317						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	Various	0.000	0.000	10/00	2.200	01/02	0.000	0	2.200	2.200	N/A
												N/A
												N/A
												N/A
												N/A
												N/A
												N/A
Subtotal Product Development			0.000	0.000		2.200		0.000		2.200	2.200	N/A
Remarks:												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 70 - 18 of 70 - 19

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 18 of 19)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/ERF,D			0603654N			EOD Diving Systems/Q1317						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			0.000	0.000		2.200		0.000		0.000	0.000	
Remarks:												

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE					
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY - BA 4				Cooperative Engagement Capability 0603658N					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	173.321	105.689	86.144	41.251	33.839	32.830	32.707	Cont.	Cont.
Cooperative Engagement Capability (CEC) K2039	115.439	73.575	86.144	41.251	33.839	32.830	32.707	Cont.	Cont.
Cooperative Engagement Capability (CEC) K2616	57.882	32.114	0.000	0.000	0.000	0.000	0.000	0.000	Cont.
Quantity of RDT&E Articles									22
<p>A. (U) 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 will significantly improve our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC will provide 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.</p> <p>(U) 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, 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 which 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.</p>									

R-1 SHOPPING LIST - Item No. 71 - 1 of 71 - 7

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 1 of 7)

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	
RDT&E, N/BA 4	Cooperative Engagement Capability 0603658N	
(U) PROGRAM ACCOMPLISHMENTS AND PLANS:		
(U) FY 2001 ACCOMPLISHMENTS:		
<ul style="list-style-type: none">- (U) (\$ 52.759) Continued CEC hardware and software engineering efforts at Raytheon Systems Company, St. Petersburg, FL.- (U) (\$ 12.187) Continued CEC TDA engineering efforts at JHU/APL.- (U) (\$ 11.165) Continued CEC E-2C integration efforts at PMA-231.- (U) (\$ 6.285) Continued development of software baseline 2.2 (AEGIS Navy Area and Theater Wide TBMD integration) with Lockheed-Martin.- (U) (\$ 18.903) Continued field support (In-service Engineering; software support; Integrated Logistics Support Planning).- (U) (\$ 46.603) Completed AN/USG-2 T&E efforts; conduct engineering, developmental and operational testing.- (U) (\$ 19.019) Continued Navy and integration exercises and integration efforts.- (U) (\$ 6.400) Continued Program Management support.		
(U) FY 2002 PLAN:		
<ul style="list-style-type: none">- (U) (\$ 39.900) Continue CEC hardware and software engineering efforts at Raytheon Systems Company, St. Petersburg, FL.- (U) (\$ 13.046) Continue CEC TDA engineering efforts at JHU/APL.- (U) (\$ 16.648) Continue CEC E-2C integration efforts at PMA-231.- (U) (\$ 18.328) Conduct Follow-on Test and Evaluation (FOT&E-1) of integrated E-2C aircraft and CEC AN/USG-3 system.- (U) (\$ 3.983) Continue Navy and integration exercises and integration efforts.- (U) (\$ 10.247) Continue field support (In-service Engineering; software support; Integrated Logistics Support Planning).- (U) (\$ 3.537) Continue Program Management support.		
(U) FY 2003 PLAN:		
<ul style="list-style-type: none">- (U) (\$ 16.835) Continue CEC hardware and software engineering efforts at Raytheon Systems Company, St. Petersburg, FL.- (U) (\$ 12.490) Continue CEC TDA engineering efforts at JHU/APL.- (U) (\$ 13.100) Continue CEC E-2C integration efforts at PMA-231.- (U) (\$ 14.000) Conduct Follow-on Test and Evaluation (FOT&E-2) of integrated E-2C aircraft and CEC AN/USG-3 system.- (U) (\$ 10.497) Continue field support (In-service Engineering; software support; Integrated Logistics Support Planning).- (U) (\$ 18.000) Continue exploration of advance concepts to further evolve CEC.- (U) (\$ 1.222) Continue Program Management support.		

R-1 SHOPPING LIST - Item No. 71 - 2 of 71 - 7

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 7)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification						DATE:			
						February 2002			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE					
RDT&E, N/BA 4				Cooperative Engagement Capability 0603658N					
B. (U) Program Change Summary:									
	FY 2001	FY 2002	FY 2003						
FY 2002 President's Budget:	177.612	74.231							
Appropriated Value:	179.257	106.631							
Adjustments to FY2001/2002									
Appropriated Value/FY2002 President's Budget:	-5.936	-0.942							
FY 2003 President's Budget Submit:	173.321	105.689	86.144						
<u>Funding:</u> FY 2001 adjustments are due to an increase for a Below Threshold Realignment (BTR) for the Ship Self Defense System (SSDS) Program (+2.200); and decreases for Small Business Innovative Research (SBIR) (\$-3.866); ASN/RDA (-2.327); and Minor Pricing Adjustments (\$-1.943). FY 2002 adjustment is a decrease for Minor Pricing Adjustments (\$-.942).									
<u>Schedule:</u> The CEC/E-2C aircraft FOT&E-1 schedule was delayed due to non-availability of test aircraft, and modification of E-2C system tracker/CEC system interface requirements. FOT&E-1 was scheduled to start in October 2001 and complete in February 2002. FOT&E-1 has been revised to start in January 2002 and complete in August 2002. The FOT&E-2 schedule, and the planned Initial Operational Cabability (IOC) of a CEC-equipped E-2C squadron in December 2003 remains unchanged.									
<u>Technical:</u> Not Applicable.									
C. (U) Other Program Funding Summary:									
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	To <u>Complete</u>	Total <u>Cost</u>
OP,N (CEC) P-1 Item No. 43	36.057	84.874	66.736	96.033	131.327	85.813	67.822	233.971	1,010.492
SC,N (Various)	33.940		12.250	44.650	21.760	56.830	23.510	417.570	700.260
AP,N (E-2C) (BA-1/5)	18.930	40.710	36.120	44.500	23.990	23.850	29.820	431.400	690.676
P,MC					12.000	17.500			29.500
O&M,N (CEC)	14.111	14.997	15.496	19.296	18.454	19.517	20.709	Continuing	Continuing

R-1 SHOPPING LIST - Item No. 71 - 3 of 71 - 7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 3 of 7)

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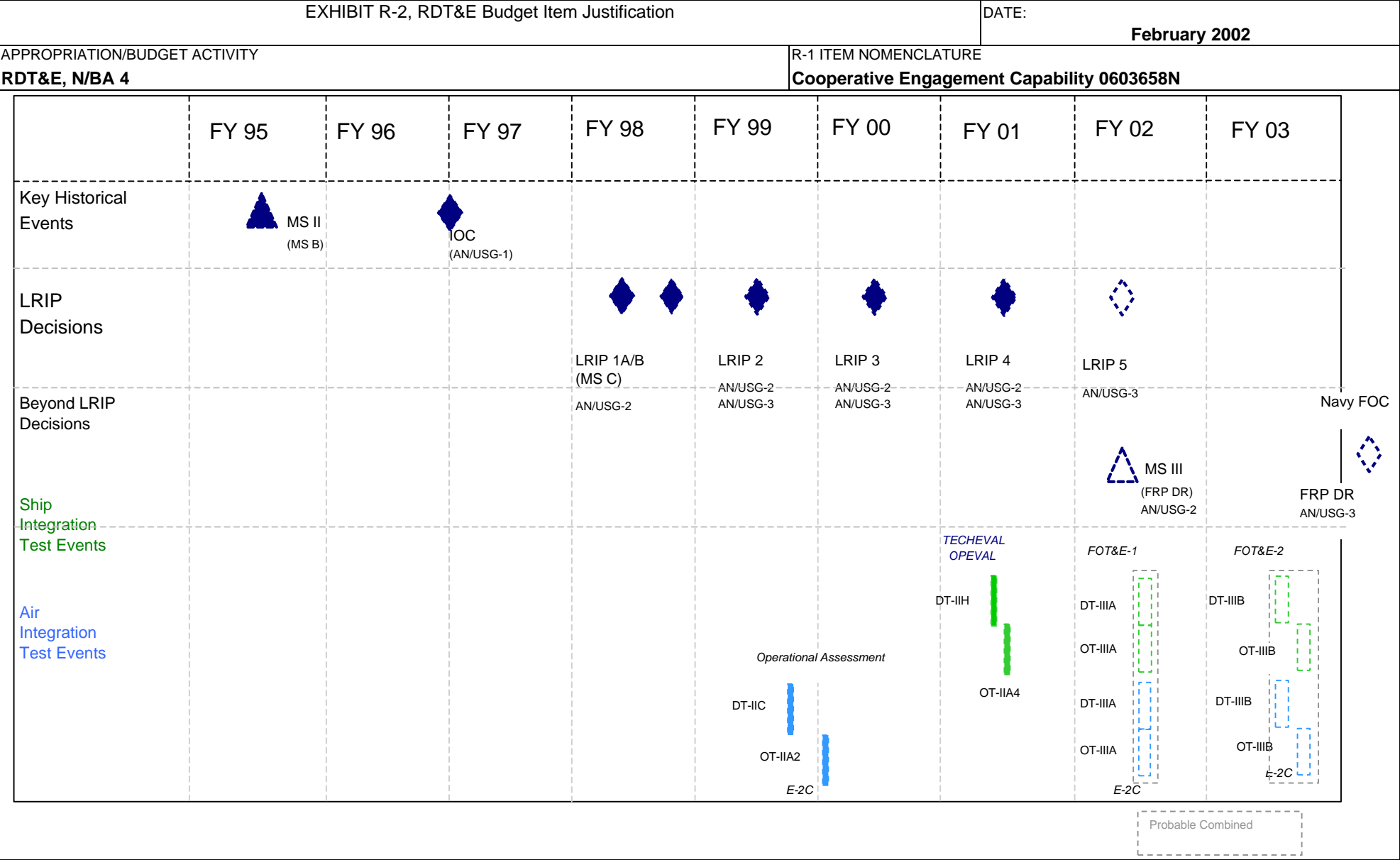
EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA 4	R-1 ITEM NOMENCLATURE Cooperative Engagement Capability 0603658N	
<p>D. (U) ACQUISITION STRATEGY:</p> <ul style="list-style-type: none">- Low Rate Initial Production (LRIP) was initiated FY 1998. Fleet deliveries will be sustained through a series of production contract awards through FY 2005.- Acquisition strategy was revised and will continue the evolution of CEC by developing follow-on capabilities and reducing recurring costs in a full and open competitive environment. The objective is to introduce industry innovation through the competitive process and drive down the cost of sensor netting. The specific follow-on capabilities will be defined during the Navy's POM-04 development process.- The following schedule has been developed to meet the revised strategy:<ul style="list-style-type: none">- Competitive contract for the follow-on "spiral acquisition" development awarded in the 1st Quarter of FY 2004.- Follow-on developments will be conducted under the heading of "Block 2" upgrades. Incremental development of Block 2 is planned to increase operational capabilities to those outlined by DoD 2020 vision. <p>E. (U) SCHEDULE PROFILE: See next page.</p>		

R-1 SHOPPING LIST - Item No. 71 - 4 of 71 - 7

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 4 of 7)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NAME AND NUMBER						
RDT&E, N/BA 4			CEC - 0603658N					CEC - Project K2039						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY00 AND PRIOR YEARS	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date			Cost to Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Development	C/CPAF	Raytheon, St. Peters., FL	526.358	52.759	Nov-00	39.900	Oct-01	16.835	Oct-02			CONT.	CONT.	TBD
AN/USG-2/3 Development/TDA	C/CPFF	JHU/APL, Laurel, MD	206.469	12.187	Nov-00	13.046	Nov-01	12.490	Nov-02			CONT.	CONT.	TBD
E-2C Aircraft Integration	C/CPAF	Northrop Grumman	147.693	11.165	Nov-00	16.648	Oct-01	13.100	Oct-02				188.606	
P-3 Aircraft Integration	C/CPAF	Lockheed-Martin	40.377										40.377	40.377
Baseline 2.2 Software Development	SS/CPAF	Lockheed-Martin	5.596	6.285	Mar-01								11.881	TBD
Space Based IR Sensors (SBIRS)	C/CPAF	Lockheed-Martin	12.843										12.843	TBD
Modeling & Simulation	PD	PMS-456	5.261										5.261	
In-Service Engineering Activity	WR	NSWC, Port Hueneme	8.491	3.402	Nov-00	1.749	Oct-01	4.462	Oct-02			CONT.	CONT.	
Land Based Test Network	PD	SPAWAR (PMW-159)	1.302										1.302	
Land Based Test Network	PD	NATC, Patuxent River	0.957										0.957	
Software Support Activity	WR	NSWC, Dahlgren, VA	35.801	9.457	Nov-00	5.105	Oct-01	3.145	Oct-02			CONT.	CONT.	
Antenna Redesign	RC	NSWC, Crane, IN	6.357										6.357	
ILS Planning	WR	NSWC, Crane, IN	35.556	1.774	Nov-00	1.194	Oct-01	1.890	Oct-02			CONT.	CONT.	
AEGIS Integration	C/CPAF	Lockheed-Martin	119.733	5.200	Dec-00								124.933	
SSDS/ACDS Integration	C/CPAF	Raytheon (Hughes), CA	36.701	3.170	Dec-00								39.871	TBD
Area Air Def. Commander (AADC)	C/CPAF	General Dynamics	10.097									0.000	10.097	
Various	Various	Miscellaneous	71.147	14.919	VARIOUS	6.182	Oct-01	19.000	Oct-02			CONT.	CONT.	
Subtotal Product Development			1,270.738	120.318		83.824		70.922				CONT.	CONT.	
Subtotal Support				.000		.000		.000		.000		.000	.000	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER							
RDT&E, N/BA 4			CEC - 0603658N				CEC - Project K2039							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	FY00 AND PRIOR YEARS	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Land Based Test Network (DEP)	WR	NSWC, Dahlgren, VA	2.627	.630	Dec-00	.385	Oct-01	.400	Oct-02				4.042	
Test Support	C/CPAF	Raytheon, St. Peters., FL	3.576	2.375	Nov-00	1.667	Nov-01	1.700	Nov-02				9.318	TBD
Test Support	C/CPFF	JHU/APL, Laurel, MD	3.931	3.961	Nov-00	1.115	Nov-01	1.000	Nov-02				10.007	TBD
Test Support	WR	NAWC-AD, Pt. Mugu, CA	.521	.050	Oct-00	.390	Oct-01	.400	Oct-02				1.361	
Test Support	WR	NRL, Washington, DC	1.819	2.200	Oct-00	1.673	Oct-01	1.706	Oct-02				7.398	
Test Support	WR	NSWC, Port Hueneme, CA	11.672	4.746	Oct-00	3.752	Oct-01	1.477	Oct-02				21.647	
Test Support	PD	PMS-456	1.196	3.340	Oct-00	.073	Oct-01	.100	Oct-02				4.709	
Test Support	PD	SPAWAR (PMW-159)	.629	.627	Oct-00								1.256	
Air Operations Test Support	WR	COMNAVAIRLANT	1.626										1.626	
Air Operations Test Support	WR	NATC, Pax River	4.724										4.724	
Air Operations Test Support	PD	NAVAIRSYSCOM (PMA-207)	2.765	.500	Oct-00	2.144	Oct-01	2.101	Oct-02				7.510	
Aircraft Test Support	PD	NAVAIRSYSCOM (PMA-231)	.268	1.000	Oct-00	.558	Oct-01	.600	Oct-02				2.426	
Test Requirements	WR	AFWTF, Puerto Rico	.777	1.962	Oct-00								2.739	
Test Requirements	WR	COMOPTEVFOR	.484	1.595	Oct-00	.790	Oct-01	.800	Oct-02				3.669	
Test Data Reduction	WR	NWAS, Corona	9.173	3.074	Oct-00	2.007	Oct-01	2.000	Oct-02				16.254	
ECM Test Support (BIG CROW)	MIPR	Kirkland AFB, NM	.957	.950	Oct-00	.558	Oct-01	.500	Oct-02				2.965	
Test Support	WR	NSWC, Crane	.385	.150	Oct-00	.056	Oct-01	.050	Oct-02				.641	
Test Support	PD	PMS-400	.550	2.007	Oct-00	.558	Oct-01	.600	Oct-02				3.715	
Various	Various	Miscellaneous	42.692	17.436	VARIOUS	2.602	VARIOUS	.566	VARIOUS				63.296	
Subtotal T&E			90.372	46.603		18.328		14.000					169.303	
Remarks:														
Program Management Support	C/CPFF	EER, Alexandria, VA	10.609	2.622	Nov-00								13.231	
Various	Various	Miscellaneous	38.988	3.778	Oct-00	3.537	Oct-01	1.222	Oct-02			CONT.	CONT.	
Subtotal Management			49.597	6.400		3.537		1.222				CONT.	CONT.	
Remarks:														
Total Cost			1,410.707	173.321		105.689		86.144				CONT.	CONT.	
Remarks:														

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002																											
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4				R-1 ITEM NOMENCLATURE Ocean Engineering Technology Development 0603713N																													
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost																								
Total PE Cost	14.591	15.935	15.257	14.582	14.852	8.604	6.729	CONT.	CONT.																								
Deep Submergence Biomedical Development/S0099	3.552	3.690	3.851	3.937	4.009	4.089	4.172	CONT.	CONT.																								
Shallow Depth Diving Equipment/S0394	11.039	12.245	11.406	10.645	10.843	4.515	2.557	CONT.	CONT.																								
Quantity of RDT&E Articles								CONT.	CONT.																								
<p>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, and tools to permit manned underwater operations.</p> <p>B. Program Change Summary:</p> <table style="width: 100%; margin-top: 20px;"> <thead> <tr> <th></th> <th style="text-align: right;">FY 2001</th> <th style="text-align: right;">FY 2002</th> <th style="text-align: right;">FY 2003</th> </tr> </thead> <tbody> <tr> <td>FY 2002 President's Budget:</td> <td style="text-align: right;">15.371</td> <td style="text-align: right;">16.077</td> <td></td> </tr> <tr> <td>Appropriated Value:</td> <td style="text-align: right;">15.371</td> <td style="text-align: right;">16.077</td> <td></td> </tr> <tr> <td>Adjustments to FY 2001/2002 Appropriated Value/FY 2002</td> <td></td> <td></td> <td></td> </tr> <tr> <td>President's Budget Submit:</td> <td style="text-align: right;">-0.780</td> <td style="text-align: right;">-0.142</td> <td></td> </tr> <tr> <td>FY 2003 President's Budget Submit:</td> <td style="text-align: right;">14.591</td> <td style="text-align: right;">15.935</td> <td style="text-align: right;">15.257</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Funding: FY01 change due to (-0.108) 7% Pro-Rata, (-0.033) Gov't.-Wide Rescission, (-0.301) FY01 SBIR Apr-27-01, (-0.300) June 01 BTRs, and (-0.038) 01 Actuals (30 Sept.01).</p> <p style="margin-left: 40px;">FY 02 change due to (-0.142) Management Reform Initiative.</p> <p style="margin-top: 20px;">Schedule: Not applicable.</p> <p style="margin-top: 10px;">Technical: Not applicable.</p>											FY 2001	FY 2002	FY 2003	FY 2002 President's Budget:	15.371	16.077		Appropriated Value:	15.371	16.077		Adjustments to FY 2001/2002 Appropriated Value/FY 2002				President's Budget Submit:	-0.780	-0.142		FY 2003 President's Budget Submit:	14.591	15.935	15.257
	FY 2001	FY 2002	FY 2003																														
FY 2002 President's Budget:	15.371	16.077																															
Appropriated Value:	15.371	16.077																															
Adjustments to FY 2001/2002 Appropriated Value/FY 2002																																	
President's Budget Submit:	-0.780	-0.142																															
FY 2003 President's Budget Submit:	14.591	15.935	15.257																														

R-1 SHOPPING LIST - Item No. 72 - 1 of 72 - 11

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 11)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N			PROJECT NAME AND NUMBER Deep Submergence Biomedical Development/S0099				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	3.552	3.690	3.851	3.937	4.009	4.089	4.172	CONT.	CONT.
RDT&E Articles Qty									
<p>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.</p> <p>Program Accomplishments and Plans:</p> <p>FY 2001 Accomplishments:</p> <ul style="list-style-type: none"> - (\$ 1.742) Diver Health and Safety Research: Completed integration of USN decompression tables across pressures, gas mixes, and repetitions. Completed comparative study of swimfins and bouyancy compensators. Completed pilot study of melatonin for decreasing oxygen toxicity. Assessed efficacy of prototype underwater hearing protection strategies. Delivered guidance for acceptable UBA respiratory loads in combination. Continued development of new diver thermal protective garments with industry, and began prototype evaluations. Began study of respiratory muscle training in EOD divers. Developed method of scaling animal decompression studies to humans. Delivered guidance for warm water diving. Initiated profile recording of operational dives. Completed development of a computerized neuropsychological test battery. Determined that the effects of carbon dioxide and oxygen on cerebral blood flow are independent, using cerebral perfusion scanning. - (\$1.810) Submarine Rescue: Developed risk curves for escapers and rescuees from pressurized DISSUB. Developed accelerated oxygen decompression schedules for rescuing DISSUB survivors. Provided a Computerized Submarine Escape and Rescue Expert System (SEAREX) for SSBN 726 class. Developed SRDRS biomedical acceptance criteria. Developed Submarine Escape Action Limits (SEALs) for gas contaminants (under review now by National Academy of Sciences.) 									

R-1 SHOPPING LIST - Item No. 72-2 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 2 of 11)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Deep Submergence Biomedical Development/S0099

FY 2002 Plan:

- (\$2.090) Diver Health and Safety Research: Pulmonary oxygen toxicity risk algorithm. 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. Investigate supercritical air for diver cooling. Submarine ballast tank air quality survey.
- (\$1.600) 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.

FY 2003 Plan:

- (\$2.451) Diver Health and Safety Research: 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.
- (\$1.400) Submarine Rescue: 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. Improved CO2 scrubber for DISSUB.

R-1 SHOPPING LIST - Item No. 72-3 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 11)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Deep Submergence Biomedical Development/S0099
<p>B. Other Program Funding Summary: Not applicable.</p> <p>Related RDT&E: Not Applicable.</p> <p>C. 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.</p> <p>D. Schedule Profile: Not applicable</p>		

R-1 SHOPPING LIST - Item No. 72-4 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 11)

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER						
RDT&E, NBA-4			Ocean Engineering Development 0603713N				Deep Submergence Biomedical Developmental/S0099						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Primary Hardware Development											0.000		
Ancillary Hardware Development											0.000		
Systems Engineering											0.000		
Licenses											0.000		
Tooling											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks: Not Applicable.													
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		
Remarks: Not Applicable.													

R-1 SHOPPING LIST - Item No. 72-5 of 72-11

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 11)

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA - 4			Ocean Engineering Development 0603713N			Deep Submergence Biomedical Development/S0099						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NEDU	11.264	3.552		3.568		3.724		CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			11.264	3.552		3.568		3.724		CONT.	CONT.	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	IPA					0.102		0.105				
Travel						0.020		0.022				
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.000		0.122		0.127		CONT.	CONT.	
Remarks:												
Total Cost			11.264*	3.552		3.690		3.851		CONT.	CONT.	
Remarks: * Prior to FY98, funds were in Project M0099.												

R-1 SHOPPING LIST - Item No. 72-6 of 72-11

Exhibit R-3, Project Cost Analysis
 (Exhibit R-3, page 6 of 11)
UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER					
RDT&E,N/BA-4		Ocean Engineering Development 0603713N			Shallow Depth Diving Equipment/S0394					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost		11.039	12.245	11.406	10.645	10.843	4.515	2.557	CONT.	CONT.
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 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.

Program Accomplishments and Plans:

FY 2001 Accomplishments:

- (\$11.039) Submarine Rescue Diving and Recompression System: Continued fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Continued design and fabrication of prototype Pressurized Rescue Module and support equipment.

R-1 SHOPPING LIST - Item No. 72-7 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 7 of 11)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Shallow Depth Diving Equipment/S0394
<p>FY 2002 Plan:</p> <p>- (\$12.245) Submarine Rescue Diving and Recompression System: Complete fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Continue design and fabrication of prototype Pressurized Rescue Module and support equipment.</p> <p>FY 2003 Plan:</p> <p>- (\$11.406) Submarine Rescue Diving and Recompression System: Complete design and fabrication of prototype Pressurized Rescue Module and support equipment. Begin acceptance testing of prototype Pressurized Rescue Module and support equipment fabrication of 2nd Pressurized Rescue Module vehicle.</p> <p>B. Other Program Funding Summary: Not applicable.</p> <p>Related RDT&E: Not Applicable.</p> <p>C. Acquisition Strategy: The Atmospheric Diving Suit (ADS) Segment of the SRDRS is a Non-Developmental Item (NDI) which is procured via a sole source contract. 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. The SRS contracts will be awarded competitively and will be based on technical capability and cost considerations (best value). Program Management of SRDRS is accomplished through the use of SEA 00C leadership of an Integrated Product Team (IPT). The Prototype system will provide full operational capability and no additional procurement is planned. The system is designed to be Government Owned/Commercially Operated (GO/CO).</p>		

R-1 SHOPPING LIST - Item No. 72-8 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2, page 8 of 11)

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EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2002

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N/BA-4

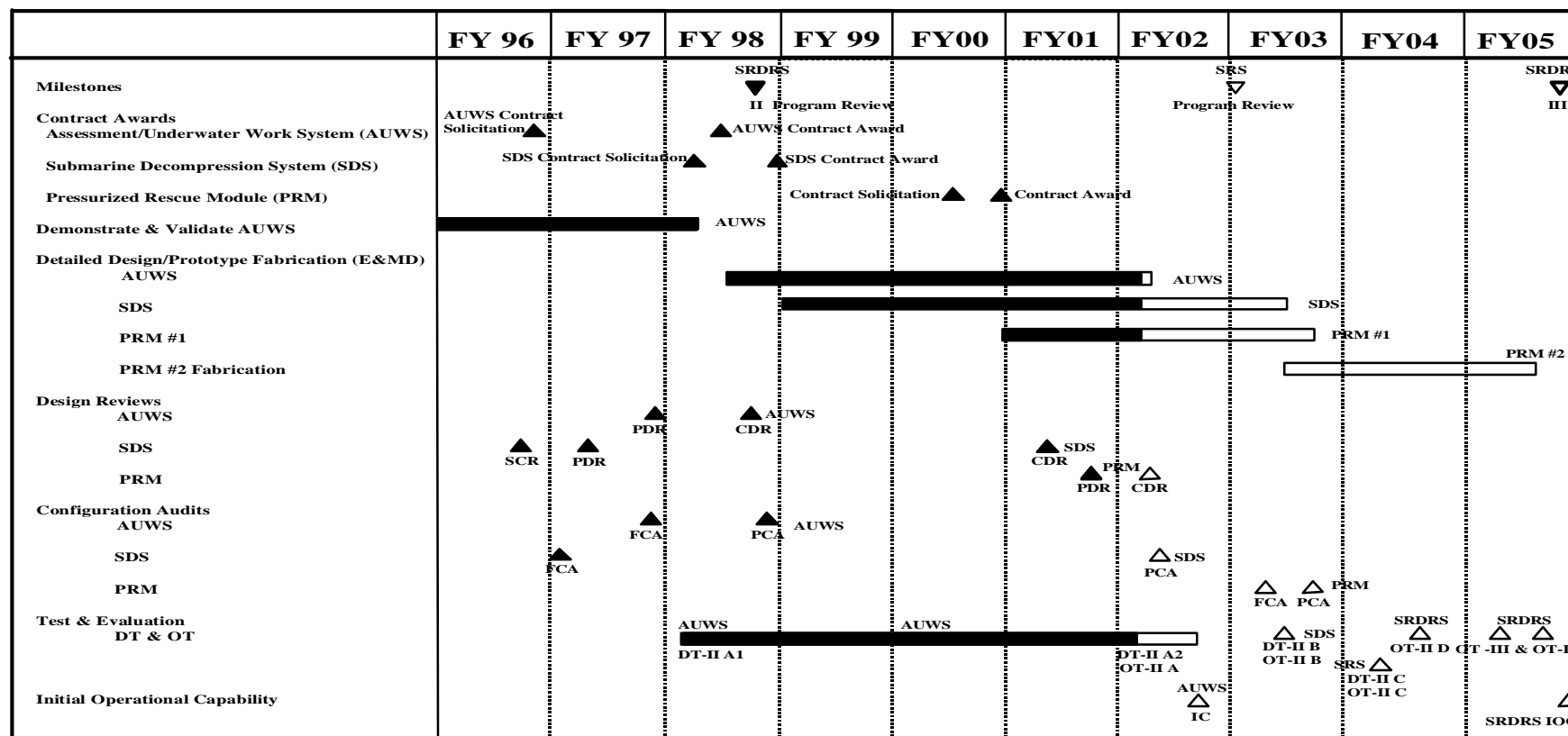
PROGRAM ELEMENT NAME AND NUMBER

Ocean Engineering Development 0603713N

PROJECT NAME AND NUMBER

Shallow Depth Diving Equipment/S0394

D. Schedule Profile:



R-1 SHOPPING LIST - Item No.

72-9 of 72-11

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 9 of 11)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE:				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			February 2002						
RDT&E, N/BA-4			Ocean Engineering Development 0603713N			Shallow Depth Diving Equipment/S0394						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC - CSS	20.089								20.089	20.089
	CPAF	Oceaneering	9.078								9.078	9.078
	RC	NAVFACCO	3.240								3.240	3.240
	CPAF	GPC	4.480	1.700	12/00	0.534	01/02				6.714	6.714
	CPIF	Hard Suits Inc.	0.688	3.772	01/01	4.008	11/01				8.468	20.244
	Various	Miscellaneous	2.138			2.462		7.106		CONT.	CONT.	
Ancillary Hardware Development											0.000	
Systems Engineering	CPAF	Oceaneering	5.985	2.268	12/00						8.253	8.253
	MIPR	VA		0.913		1.500	01/02					
	Various	Miscellaneous				1.375		2.000		CONT.	CONT.	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees	CPAF	Oceaneering	1.076	0.158	12/00						1.234	
	CPAF	GPC	0.187	0.051	12/00	0.016	01/02				0.254	
											0.000	
Subtotal Product Development			46.961	8.862		9.895		9.106		CONT.	CONT.	
Remarks: Award Fees are 6%.												
Development Support Equipment											0.000	
Software Development	WR	NSWC CD	0.221								0.221	0.221
Training Development											0.000	
Integrated Logistics Support	MIPR	DOI	0.809	0.905	01/01						1.714	1.714
	Various	Miscellaneous				0.850		0.800			1.650	1.650
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			1.030	0.905		0.850		0.800		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 72-10 of 72-11

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 10 of 11)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA - 4			Ocean Engineering Development 0603713N			Shallow Depth Diving Equipment/S0394						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	0.915	0.168		0.300		0.300		CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.915	0.168		0.300		0.300		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	Various	Miscellaneous	0.993	0.232		0.250		0.250		CONT.	CONT.	
Government Engineering Support	WR	NFESC	0.316	0.050	02/01						0.366	0.366
	MIPR	DOI	0.638	0.523	01/01						1.161	1.161
	Various	Miscellaneous	0.210	0.137		0.750		0.750		CONT.	CONT.	
Program Management Support	Various	Miscellaneous	0.115	0.092		0.100		0.100		CONT.	CONT.	
Travel			0.235	0.070		0.100		0.100		CONT.	CONT.	
Labor (Research Personnel)			0.453							CONT.	CONT.	
Overhead	Various	Miscellaneous										
Subtotal Management			2.960	1.104		1.200		1.200		CONT.	CONT.	
Remarks:												
Total Cost			51.866	11.039		12.245		11.406		CONT.	CONT.	
Remarks:												

R-1 SHOPPING LIST - Item No. 72-11 of 72-11

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 11 of 11)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, BA4					R-1 ITEM NOMENCLATURE Environmental Protection / PE0603721N					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		71.486	47.692	44.206	44.085	42.321	35.109	33.759	Cont	Cont
Shipboard Waste Mgmt / S0401		46.399	31.559	28.798	28.403	26.536	19.150	17.527	Cont	Cont
Env Compliance / W2210		4.744	4.571	4.890	4.962	5.157	5.231	5.317	Cont	Cont
Aviation Depot Maint Tech / W2623*		1.941	0.000	0.000	0.000	0.000	0.000	0.000	0.0	5.869
Pollution Abatement / Y0817		8.697	9.580	10.518	10.720	10.628	10.728	10.915	Cont	Cont
Asbestos Removal / Y2402*		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	9.704
Resource Recovery Tech Center / Y2403*		1.982	0.000	0.000	0.000	0.000	0.000	0.000	0.0	20.428
Depleted Uranian Stabilization / Y2837*		7.723	0.000	0.000	0.000	0.000	0.000	0.000	0.0	7.927
Navy Environmental Compliance Ops / H9046*		0.000	1.982	0.000	0.000	0.000	0.000	0.000	0.0	1.982
A. (U) Mission Description and Budget Item Justification: This program develops processes, prototype 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 U.S. statutes and international agreements. Projects support the Navy's compliance with: OPNAVINST 5090.1B CH-2 of 9 September 1999 and other Navy environmental-related policies; the Clean Water Act, Clean Air Act, Act to Prevent Pollution from Ships, National Environmental Policy Act, Marine Plastic Pollution Research and Control Act, Endangered Species Act, Marine Mammal Protection Act, Resource Conservation and Recovery Act, Toxic Substances Control Act, U.S. Public Vessel Medical Waste Anti-Dumping Act, and Federal Facility Compliance Act; and Executive Orders 12088, 12114, 12843, 13089, 13101, 13112, 13148, and 13158. Project S0401 supports RDT&E efforts that allow Navy ships and submarines to comply with existing and emerging laws, regulations, and policies in four major areas: ozone depleting substances, liquid wastes, solid wastes, and hazardous and other wastes. Project W2210 and Project Y0817 support and validate development of technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner. * Projects W2623, Y2402, Y2403, Y2837 and H9046 are Congressional adds.										

R-1 - Item No. 73-1 of 73-21

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 21)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, BA4		Environmental Protection / PE 0603721	
B. (U) Program Change Summary:			
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
FY 2002 President's Budget:	73.506	46.116	0.000
(U) Appropriated Value:	62.194	48.117	0.000
(U) Adjustments to FY 2002/2003			
Appropriated Value/FY 2002			
President's Budget:	<u>9.652</u>	<u>-0.425</u>	<u>0.000</u>
FY 2003 OSD/OMB Budget Submit:	71.846	47.692	44.206
(U) Funding:			
FY2001 Adjustments: (+\$2.000M) for Aviation Depot; (+2.000M) for Resource Preservation; (+\$8.000M) Depleted Uranium Stabilization; (-\$0.936M) for BTRs; (-\$0.822M) SBIR reduction; .7% pro rata reduction			
(-\$.520M); Government-wide rescission (-\$0.161M); and other adjustments (+\$.091M).			
FY2002 Adjustments: (-\$0.425M) Sec 8123: Management.			
(U) Schedule: Not applicable.			
(U) Technical: Not applicable.			

R-1 - Item No. 73-2 of 73-21

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, BA4	Environmental Protection / PE0603721N				Shipboard Waste Management / S0401					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Shipboard Waste Management / S0401		46.399	31.559	28.798	28.403	26.536	19.150	17.527	Cont	Cont
RDT&E Articles Qty										
Oily Waste Polishing System - Engineering Development Models		1-\$0.4M								
Non-Oily Waste Polishing System - Engineering Development Models		1-\$1M		1-\$0.6M		1-\$2.0M				
Non-CFC Refrigerant Replacement Kits - Engineering Development Models										
Liquid Waste Thermal Destruction - Engineering Development Models										
Shipboard Pollution Prevention - Test Articles						2-\$0.8M		2-\$0.4M		
Solid Waste - Engineering Development Models		1-\$2M	1-\$2M							
Underwater Hull Cleaning - Engineering Development Models		1-\$0.7M		1-\$0.9M						
A. (U) Mission Description and Budget Item Justification										
1. (U) FY 2001 ACCOMPLISHMENTS:										
(U) (\$6.000M) Ozone Depleting Substances - Completed development and qualification of backfit modifications for remaining surface ship 250-ton CFC-114 air-conditioning plant designs. Continued development of shipboard alternative (non-vapor-compression) cooling concepts. Continued evaluation of non-ozone depleting substance (non-ODS) fire protection concepts and systems for future surface combatants.										
(U) (\$25.599M) Integrated Liquid Wastes - 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 10-gpm Oil/Water Separator (OWS-10) Polisher, continued development of 50-gpm Oil/Water Separator (OWS-50) Polisher, and continued development of 5-gpm Oil/Water Separator (OWS-5) Polisher; continued development of advanced Oil Content Monitor (OCM); continued development of Engineering Development Model (EDM) non-oily wastewater treatment system; and continued development of advanced thermal destruction system for concentrated ship liquid wastes. Continued development of design fixes for compensated fuel ballast systems.										
(U) (\$5.400M) Solid Wastes - Continued development of management processes and systems for plastics for submarine application: completed transition of SSBN-726 Class submarine design solution; initiated planning for SSN-21 Class submarine modification and at-sea evaluation; and continued investigation of onboard storage techniques and locations for SSN-774 Class submarines. Continued development of advanced thermal destruction system for processing shipboard solid wastes.										
(U) (\$9.400M) Hazardous and Other Major Ship Wastes - Continued shipboard hazardous materials substitution and elimination process and continued test and evaluation of pollution-prevention equipment aboard ship. Continued quality assurance testing on reformulated commercial paints. Continued development of oil spill response capabilities: continued development of Recovered Oil Logistics System; continued oil spill risk assessment program for major Navy ports; initiated development of portable oil incinerator system; and initiated development of oil spill program Geographical Information System (GIS). Continued development of marine mammals ship database tracking system: initiated demonstration. Continued development and testing of new low-copper underwater hull antifouling coatings. Continued development of underwater hull cleaning system.										

R-1 - Item No. 73-3 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, BA4	Environmental Protection / PE0603721N	Shipboard Waste Management / S0401

2. (U) FY 2002 PLAN:

(U) (\$3.100M) Ozone Depleting Substances - Complete Integrated Logistics Support (ILS) documentation for CFC-114 air-conditioning plant designs. Continue development of shipboard alternative (non-vapor-compression) cooling concepts. Continue evaluation of non-ozone depleting substance (non-ODS) fire protection concepts and systems for future surface combatants.

(U) (\$11.859M) Integrated Liquid Wastes - Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: complete development of 10-gpm Oil/Water Separator (OWS-10) Polisher and continue ILS documentation, complete development of 50-gpm Oil/Water Separator (OWS-50) Polisher and continue ILS documentation, and complete development of 5-gpm Oil/Water Separator (OWS-5) Polisher and continue ILS documentation; complete development of advanced Oil Content Monitor (OCM); continue development of Engineering Development Model (EDM) non-oily wastewater treatment system; and complete development of advanced thermal destruction system for concentrated ship liquid wastes. Complete development of design fixes for compensated fuel ballast systems.

(U) (\$8.000M) Solid Wastes - Continue development of management processes and systems for plastics for submarine application: initiate SSN-21 Class submarine at-sea evaluation; and continue investigation of onboard storage techniques and locations for SSN-774 Class submarines. Continue development of advanced thermal destruction system for processing shipboard solid wastes.

(U) (\$8.600M) Hazardous and Other Major Ship Wastes - Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard ship. Continue quality assurance testing on reformulated commercial paints. Complete development of oil spill response capabilities: complete development of Recovered Oil Logistics System; complete oil spill risk assessment program for major Navy ports; complete development of portable oil incinerator system; complete development of oil spill program Geographical Information System (GIS). Continue development of marine mammals ship database tracking system: continue demonstration. Continue development and testing of new low-copper underwater hull antifouling coatings. Continue development of underwater hull cleaning system.

R-1 - Item No. 73-4 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, BA4	Environmental Protection / PE0603721N	Shipboard Waste Management / S0401

3. (U) FY 2003 PLAN:

(U) (\$3.591) Ozone Depleting Substances - Continue development of shipboard alternative (non-vapor-compression) cooling concepts. Complete evaluation of non-ozone depleting substance (non-ODS) fire protection concepts and systems for future surface combatants.

(U) (\$10.407) Integrated Liquid Wastes - Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: complete 10-gpm Oil/Waste Separator (OWS-10) Polisher ILS documentation, complete 50-gpm Oil/Water Separator (OWS-50) Polisher ILS documentation, and complete development of 5-gpm Oil/Water Separator (OWS-5) Polisher ILS documentation; continue development of Engineering Development Model (EDM) non-oily wastewater treatment system.

(U) (\$6.500) Solid Wastes - Continue development of advanced thermal destruction system for processing shipboard solid wastes. Complete development of management processes and systems for plastics for submarine application: complete transition of SSN-21 Class and SSN-774 Class submarine design solutions.

(U) (\$8.300) Hazardous and Other Major Ship Wastes - Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard ship. Complete quality assurance testing on reformulated commercial paints. Initiate development of Environmental Information Management System (EIMS). Continue development of marine mammals ship database tracking system: continue demonstration. Continue development and testing of new low-copper underwater hull antifouling coatings. Continue development of underwater hull cleaning system.

B. (U) Other Program Funding Summary: 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/R3162)

(U) Readiness, Training, and Environmental Quality/Logistics and Environmental Quality (PE 62233N)

(U) Environmental Quality and Logistics Advanced Technology/Environmental Requirements Advanced Technology (PE 63712N/R2206)

C. (U) Acquisition Strategy: (U) RDT&E Contracts are Competitive Procurements.

R-1 - Item No. 73-5 of 73-21

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 5 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY		February 2002
PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, BA4	Environmental Protection / PE0603721N	
Shipboard Waste Management / S0401		
D. (U) Schedule Profile:		
<u>FY01</u>	<u>FY02</u>	<u>FY03</u>
<u>Ozone Depleting Substance</u> Complete Development of Remaining 250-Ton A/C Modification Kits	<u>Ozone Depleting Substance</u> Complete ILS Documentation for CFC-114 A/C Plant Backfit Designs	<u>Ozone Depleting Substance</u> Complete non-ODS fire protection systems
<u>Integrated Liquid Wastes</u>	<u>Integrated Liquid Wastes</u> Complete Development of OWS-10 Oily Waste Polisher Complete Development of OWS-50 Oily Waste Polisher Complete Development of OWS-5 Oily Waste Polisher Complete Development of Advanced Oil Content Monitor Complete Development of Design Fixes for Compensated Fuel Ballast Systems	<u>Integrated Liquid Wastes</u> Complete Development of OWS-10 Oily Waste Polisher ILS Complete Development of OWS-50 Oily Waste Polisher ILS Complete Development of OWS-5 Oily Waste Polisher ILS
<u>Shipboard Solid Wastes</u> Completed SSBN-726 Class Submarine Plastics Waste Solution Initiated SSN-21 Class Submarine Plastics Waste Solution Design	<u>Shipboard Solid Wastes</u> Initiate SSN-21 Class Submarine Plastics Waste At-Sea Evaluation	<u>Shipboard Solid Wastes</u> Complete Development of Submarine Plastics Waste Solutions
<u>Hazardous & Other Major Ship Wastes</u> Initiate Development of Oil Spill Portable Oil Incinerator Initiate Development of Oil Spill Geographic Information System Initiate Marine Mammals Tracking Database Demonstration	<u>Hazardous & Other Major Ship Wastes</u> Complete Development of Oil Spill Response Capabilities	<u>Hazardous & Other Major Ship Wastes</u> Complete Testing of Reformulated Commercial Paints Initiate Development of Environmental Information Management System

R-1 - Item No. 73-6 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6 of 21)

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 1)								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, BA4			Environmental Protection / PE0603721N			Shipboard Waste Management / S0401						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF	Westinghouse Machinery Tech Div, Pitts, PA	14.580	0.000	N/A	0.000	N/A			N/A	14.580	14.580
Primary Hardware Development	C/CPFF	Geo-Centers, Inc., Boston, MA	13.750	6.500	12/00	3.000	12/01	2.000	01/03	Cont	Cont	N/A
Primary Hardware Development	SS/CPFF	York International Corp York, PA	2.700	0.000	N/A	0.000	N/A			N/A	2.700	2.700
Primary Hardware Development	SS/CPFF	York International Corp York, PA	8.350	2.500	02/01	1.000	01/02			10.150	25.000	25.000
Primary Hardware Development	SS/CPFF	Northern Research & Engineering Corp, Waburn, MA	1.200	0.000	N/A	0.000	N/A			N/A	1.200	1.200
Primary Hardware Development	C/CPFF	M. Rosenblatt & Son New York, NY	9.363	1.000	01/01	0.500	01/02	1.000	01/03	Cont	Cont	N/A
Ancillary Hardware Development	Various	Misc. Contracts	15.110	1.274	N/A		N/A	1.500	Var	N/A	N/A	N/A
Systems Engineering	C/CPFF	John J. McMullen &	3.587	0.600	12/00	0.300	12/01	0.600	12/02	Cont	Cont	N/A
Subtotal Product Development			68.640	11.874		4.800		5.100		Cont	Cont	N/A
Remarks: (1) Hardware Development and Systems Engineering Tasks use CPFF Delivery Order Contracts for Continuing Development of Pollution Abatement Hardware and Ship Systems Engineering Analysis												
Software Development	Various	Misc. Contracts	0.000	0.000		0.000				0.000	0.000	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	
Remarks: Not Applicable.												

R-1 - Item No. 73-7 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 21)

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N			PROGRAM ELEMENT Environmental Protection / PE0603721N			PROJECT NAME AND NUMBER Shipboard Waste Management / S0401						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Carderock Div, Bethesda, MD	86.324	18.200	N/A	18.000	N/A	12.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	Naval Research Lab Wash, DC	19.082	3.000	N/A	3.000	N/A	2.200		Cont	Cont	N/A
Developmental Test & Evaluation	WR	SPAWARSSYSCEN San Diego, CA	3.310	3.000	N/A	1.500	N/A	2.000		Cont	Cont	N/A
Process Control Engineering	C/CPFF	GSA/BAH Arlington, Va	0.000	3.020	N/A	2.473	12/01	4.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	Misc. Govt Labs	21.332	0.700	N/A	0.200	N/A	0.500		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	Geo-Centers, Inc. Boston, MA	9.151	1.500	12/00	1.500	12/01	1.000	01/03	Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	York International Corp, York , PA	12.000	0.000	N/A	0.000	N/A			0.000	12.000	12.000
Developmental Test & Evaluation	C/CPFF	Misc. Contracts	7.440	5.055	Var	0.036	Var	1.948	Var	Cont	Cont	N/A
Subtotal T&E			158.639	34.475		26.709		23.648		0.000	Cont	N/A
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.050		0.050		0.050			Cont	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.050		0.050		0.050		0.000	Cont	
Remarks: Not applicable.												
Total Cost			227.349	46.399		31.559		28.798		Cont	Cont	Cont
Remarks:												

R-1 - Item No. 73-8 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E, BA4	Environmental Protection / PE0603721N				Environmental Compliance / W2210					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Environmental Compliance / W2210		4.744	4.571	4.890	4.962	5.157	5.231	5.317	Cont	Cont
RDT&E Articles Qty										
A. (U) Mission Description and Budget Item Justification: This project supports development and implementation of technologies which will lead to environmentally safe naval aviation operations and support; compliance with international, federal, state, and local regulations and policies; reduction of increasing compliance costs and personal liability; and enhancement of naval aviation mission effectiveness. Naval aviation pollution prevention efforts were previously supported by Project Y0817, Pollution Abatement Ashore. This project will support that part of project Y0817 that addressed aviation pollution prevention technologies as well as additional operational and shipboard aviation requirements previously unsupported. Specific regulatory requirements include Executive Orders 12856 (Pollution Prevention) and 12873 (Recycling & Waste Prevention), the Clean Air Act (CAA) and associated National Emission Standards for Hazardous Air Pollutants (NESHAPs) and National Ambient Air Quality Standards (NAAQS), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), as well as Occupational, Safety and Health Administration (OSHA) standards.										
1. (U) FY 2001 ACCOMPLISHMENTS:										
(U) (\$2.782M) Continued to research, develop, and test alternatives to aircraft manufacturing, finishing, repair and maintenance processes that use toxic heavy metals, hazardous air pollutants (HAPs), and volatile organic compounds (VOCs). Continued to formulate and certify newly developed aircraft coatings. Continued technology research development, demonstrations/validations of alternatives to chromium and cadmium electroplating processes. Continued to develop and validate source reduction in aircraft wash. Continued to develop and demonstrate alternative propulsion system technologies that minimize the use and generation of hazardous materials in operations, manufacturing and repair processes. Initiated development of low engine emissions technology. Completed development of non-chromated paint primers, non-HAP sealants, mobile paint stripping technology, non-HAPs pre-paint cleaner.										
(U) (\$0.290M) Continued to provide scientific and technical expertise for continued aviation pollution prevention technology development, demonstration and validation.										
(U) (\$0.535M) Continued to develop and demonstrate low-VOC, non-chromated adhesive bonding primers and aluminum-manganese as a cadmium replacement.										
(U) (\$0.445M) Completed development and demonstration of conversion coatings alternatives.										
(U) (\$0.280M) Continued development and demonstration of alternative ordnance materials and processes.										
(U) (\$0.412M) Continued development and demonstration of environmentally compatible Aircraft Launch and Recovery Equipment (ALRE) lubricants and certify processes that reduce their emission to the sea.										

R-1 - Item No. 73-9 of 73-21

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 9 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Environmental Compliance / W2210

2. (U) FY 2002 PLAN:

(U) (\$2.060M) Continue to research, develop, and test alternatives to aircraft manufacturing, finishing, repair and maintenance processes that use toxic heavy metals, hazardous air pollutants (HAPs), and volatile organic compounds (VOCs). Continue to formulate and certify newly developed aircraft coatings. Continue technology research development, demonstrations/validations of alternatives to chromium and cadmium electroplating processes. Continue to develop and validate source reduction in aircraft wash. Continue to develop and demonstrate alternative propulsion system technologies that minimize the use and generation of hazardous materials in operations, manufacturing and repair processes. Continue development of low engine emissions technology. Initiate testing of non-chrome anodize coatings. Initiate flight evaluations of high velocity oxy fuel (HVOF) coatings and non-chrome anodize coating. Initiate evaluations of environmentally compliant Sol-Gel materials. Initiate development of a low emissions combustor technology. Complete evaluation of zero VOC exterior aircraft coating. Complete development of aluminum-manganese coatings as cadmium plating replacements.

(U) (\$0.331M) Continue to provide scientific and technical expertise for continued aviation pollution prevention technology development, demonstration and validation: initiate flight evaluation of a non-chrome anodizing technology.

(U) (\$0.426M) Initiate evaluation of low-VOC bonding, petroleum distillate (PD) solvent alternatives.

(U) (\$0.426M) Initiate flight evaluations of conversion coating alternatives, aluminum manganese (Al/Mn) coatings.

(U) (\$0.950M) Continue development and demonstration of alternative weapons and ordnance materials and processes.

(U) (\$0.378M) Continue development and demonstration of environmentally acceptable ALRE technologies.

3. (U) FY 2003 PLAN:

(U) (\$3.140M) Continue to research, develop, and test alternatives to aircraft manufacturing, finishing, repair and maintenance processes that use toxic heavy metals, hazardous air pollutants (HAPs), and volatile organic compounds (VOCs). Continue to formulate and certify newly developed aircraft coatings. Continue technology research development, demonstrations/validations of alternatives to chromium and cadmium electroplating processes. Continue to develop and validate source reduction in aircraft wash. Continue to develop and demonstrate alternative propulsion system technologies that minimize the use and generation of hazardous materials in operations, manufacturing and repair processes. Complete testing of non-chrome anodize coatings. Initiate development of low engine noise technologies. Complete development of low engine emissions combustor technology. Continue flight evaluations of HVOF coatings.

(U) (\$0.350M) Continue to provide technical expertise for continued flight evaluations of aviation pollution prevention technologies. Complete flight testing of a non-chrome anodizing technology.

(U) (\$0.450M) Complete evaluation of low VOC bonding, petroleum distillate (PD) solvent alternatives.

(U) (\$0.450M) Complete flight evaluation of conversion coating alternatives, aluminum manganese (Al/Mn) coatings

(U) (\$0.100M) Continue to develop and demonstrate alternative weapons and ordnance materials and processes.

(U) (\$0.400M) Complete development and demonstration of environmentally acceptable ALRE technologies.

R-1 - Item No. 73-10 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 10 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Environmental Compliance / W2210

B. (U) Other Program Funding Summary: Not applicable.

(U) RELATED RDT&E:

PE 0602233N (Readiness/Training/Environmental Quality)
PE 0603716D (Strategic Environmental R&D Program)
PE 0603851D (Environmental Security Technology Certification Program)
PE 0603721N (Environmental Quality & Logistics Advanced Technology)

C. (U) 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.

D. (U) Schedule Profile:

FY01

Engineering Milestones
Complete Development Conv Coating Alternatives
Complete Development Non-Chromated Primers
Complete Development Non-HAP Sealants
Complete Development Mobile Paint Stripping Technology
Complete Evaluation Non-HAPs Prepaint Cleaner
Initiate Development Low Engine Emissions Technology

FY02

Engineering Milestones
Complete Development Al/Mn Coatings
Comp Eval Zero VOC Topcoat
Init Flight Eval Conv Coatings
Init Eval Low VOC Bonding
Init Eval PD Solvent Alt
Init Test Non-Chrome Anodized Coatings
Init Flight Eval Al/MnCoatings
Init Flight Eval HVOF Coatings
Init Eval Compliant Sol-Gel Mat
Init Dev Low Emiss Combustor
Init Flight Eval Non-Chrome Anodize

FY03

Engineering Milestones
Comp Flight Eval of Conv Coat Alts
Comp Test Non-Chrome Anodize
Comp Eval Low VOC Bonding
Comp Flight Eval HVOF Coatings
Comp Flight Eval Non-Chrome Anodize
Comp Flight Eval Al/Mn Coatings
Init Dev Low Engine Noise Tech
Comp dev/dem ALRE tech
Cont Dev Low Emission Engine Tech

R-1 - Item No. 73-11 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 11 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4			PROGRAM ELEMENT Environmental Protection / PE0603721N			PROJECT NAME AND NUMBER Environmental Compliance /W2210						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Systems Engineering	WX	Various		1.990		1.773		1.853		Cont	Cont	
	WX	NAWC-Pax		2.742		2.783		3.020		Cont	Cont	
Subtotal Product Development			0.000	4.732		4.556		4.873		Cont	Cont	
Remarks:												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not Applicable.												

R-1 - Item No. 73-12 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 12 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 2)								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N			Environmental Protection / PE0603721N			Environmental Compliance /W2210						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												N/A
Operational Test & Evaluation												N/A
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		N/A
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	NAWC Pax		0.012		0.015		0.017		Cont	Cont	Cont
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.012		0.015		0.017		0.000	Cont	
Remarks: Not applicable.												
Total Cost				4.744		4.571		4.890		Cont	Cont	Cont
Remarks:												

R-1 - Item No. 73-13 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 13 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N				PROJECT NAME AND NUMBER Pollution Abatement / Y0817					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Pollution Abatement / Y0817		8.697	9.580	10.518	10.720	10.628	10.728	10.915	Cont	Cont
RDT&E Articles Qty										

A. (U) Mission Description and Budget Item Justification: This project develops and validates new technologies needed to address pervasive Navy shoreside environmental requirements imposed on Naval shore activities by the need to comply with environmental laws, regulations, orders, and policies. The goal of the program is to minimize personnel liabilities, operational costs, and regulatory oversight while preserving or enhancing the ability of Naval shore activities to accomplish their required missions and functions. Each project task addresses one or more of the requirements from the Navy Environmental Quality RDT&E Requirements of January 2001. Project investment is made in six thrust areas identified for FY02. Thrust areas have changes from FY01 to better align the tasks with technical area needs resulting from shoreside requirements.

(U) SHIP MAINTENANCE/REPAIR/DEACTIVATION

(U) Thus far, tasks in this thrust area have addressed environmental requirements originating at Naval shipyards. As the Navy pursues a strategy to reduce ship maintenance costs by shifting work to Ship Intermediate Maintenance Activities (SIMAs), new requirements are emerging as these processes and resulting hazardous waste streams become more decentralized. SIMAs will require technologies that are cost-effective when operated less frequently and with lower throughput. Future SIMA tasks will be selected based on compliance and pollution prevention studies being conducted on the Naval Station Mayport SIMA as part of the Navy Environmental Leadership Program (NELP) during FY 1999.

(U) ORDNANCE TESTING/MANUFACTURE/DISPOSAL

(U) Current tasks in this thrust address specific compliance-driven environmental requirements of Navy ordnance activities. With respect to disposal, the thrust addresses requirements for disposal of quantities typical of testing and manufacturing operations, not of the much larger quantities associated with demilitarization. Future tasks will shift much of the investment in this area to pollution prevention requirements, particularly where they also reduce compliance impacts and costs. These tasks will be identified as part of an ordnance environmental requirements study being conducted in partnership with the Navy's Ordnance Environmental Specialty Office (OESO) during FY 1999.

(U) INDUSTRIAL OPERATIONS AND MAINTENANCE

(U) Tasks in this thrust address compliance and pollution prevention environmental requirements originating from the industrial operations of Navy Public Works Centers and Naval Stations. As part of an overall Navy strategy, future tasks will shift more of the investment from compliance technologies to pollution prevention technologies that are cost-effective solutions to compliance requirements. It is also expected that there will be new requirements driven by the trend towards stricter federal, state, and local air emission and wastewater regulations.

R-1 - Item No. 73-14 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 14 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Pollution Abatement /Y0817

(U) INSTALLATION RESTORATION

(U) Tasks in this thrust address requirements to reduce air and water emissions (Clean Air Act (CAA), Clean Water Act (CWA)), hazardous waste (Resource Conservation & Recovery Act (RCRA)) generation, and cost of environmental compliance for non-industrial operations occurring at Naval activities. In addition, tasks evaluate alternative restoration technologies for the over 1000 Navy sites requiring cleanup and restoration under Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA). The alternative restoration tasks are selected and linked to the urgent requirements of specific restoration projects in partnership with the Navy's Alternative Restoration Technology Team (ARTT). It is expected that one area requiring new investment is technologies to reduce the long-term operation and monitoring costs of installation restoration projects. This thrust will be renamed in FY02 to focus solely on Installation Restoration issues for soil and groundwater. Efforts addressing contaminated sediments were realigned in FY02 under a separate thrust. Tasks addressing emissions detection and monitoring of air and water contaminants were addressed under a separate thrust in FY02.

(U) HAZARDOUS WASTE MINIMIZATION

(U) Prior tasks have shown that the Navy neither has the funding required to acquire a new government-owned hazardous waste treatment system nor a large enough hazardous waste stream to make a new contractor-owned treatment systems profitable. Tasks address requirements to upgrade capabilities of Navy-owned Industrial Waste Treatment Plants (IWTPs) and/or to pre-treat Navy-generated wastes prior to being discharged to Publicly-Owned Wastewater Treatment Systems (POWTS). Tasks in this thrust address requirements to reduce air and water emissions (Clean Air Act (CAA), Clean Water Act (CWA)), hazardous waste (RCRA) generation, and cost of environmental compliance for non-industrial operations occurring at Naval activities. This thrust area was completed in FY01. Efforts addressing requirements for pollution prevention and recycling of hazardous wastes will be addressed under the Industrial Operations and Maintenance thrust.

(U) COASTAL CONTAMINATION AND CONTAMINATED SEDIMENTS

(U) This thrust area was created in FY02, providing specific focus to some of the requirements addressed formerly under non-industrial operations thrust area. Tasks within this area address requirements for reducing the cost of environmental compliance and cleanup for coastal contamination and contaminated sediments. Navy compliance with all of the laws and regulations dealing with marine and coastal environments is complex and costly. Tasks will develop and evaluate technologies for sediment characterization and monitoring, sediment management and remediation, and marine environmental risk assessment.

(U) EMISSIONS DETECTION AND MONITORING

(U) This thrust area was created in FY02. Tasks under this thrust will address legal and policy requirements for monitoring and detection of wastewater discharges and air emissions. The detection and monitoring devices and procedures demonstrated under this thrust will improve process performance, provide mission-compatible compliance with provisions of the Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation & Recovery Act (RCRA), Toxic Substance Control Act(TSCA), State, and local regulations and reduce costs for environmental sampling analysis. In addition, Navy operational air pollution modeling capability will be developed and including hardware, software, system administration processes, and guidelines. On-going task for Real-Time Monitoring of Copper effluent was realigned under this thrust.

R-1 - Item No. 73-15 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 15 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Pollution Abatement /Y0817

1. (U) FY2001 ACCOMPLISHMENTS:

(U) (\$2.105M) Ship Maintenance/Repair/Deactivation - Completed development of Air Emission Reduction from Shipyard Cutting and Arc-Gouging Operations. Continued development of Automated Paint Application with Overspray Capture and Treatment. Continued evaluation of Advanced Oil Spill Response Equipment. Continued development of techniques for Real-Time Monitoring of Copper Effluents from dry-dock operations. Initiated development of Coating Removal from Delicate Substrates on Navy vessels.

(U) (\$1.677M) Ordnance Testing/Manufacture/Disposal - Continued development of Exhaust Scrubber for Static Testing of Small Rocket Motors: complete fabrication of phase 2 prototype. Continued development of Confined Burn Facility to Replace Open Burning of Ordnance and Energetics.

(U) (\$2.067M) Other Industrial Operations - Completed validation of In-Line Monitoring and Diversion of Aqueous Film-Forming Foam (AFFF) Discharges. Continued task to address requirements for Reduced Air Emissions from Diesel Engines. Initiate task to address shoreside requirements for aircraft maintenance facilities needed to support the Integrated Maintenance Concept (IMC). Initiated Oil Spill Prevention Ashore effort. Initiated Catalysts for Advanced Oxidation Processes (AOP) for paint stripping wastewater. Initiated Environmental Assessment for Ground Support Equipment (GSE).

(U) (\$1.968M) Non-Industrial Operations - Completed organics upgrade of Benthic Flux Sampling Device. Completed development of subsurface contaminant transport and Dense Non-Aqueous Phase Liquid (DNAPL) sensor system. Complete development of software tool for Determining Remediation Timeframes Associated with Monitored Natural Attenuation. Continued development of Methods to Assess Subsurface Contaminant Migration from Coastal Landfills. Continued Toxicity Identification Evaluations (TIE) for identifying Contaminants of Concern (CoCs) in Contaminated Sediments. Initiated study of Fate/Effect of Underwater Unexploded Ordnance (UXO).

(U) (\$0.880M) Hazardous Waste Minimization/Recycling/Disposal - Completed development of Shoreside Collection and Treatment System for Compensated Fuel Tank Ballast Water. Completed demonstration of Recycle/Recovery and Chromium Wastewaters discharged to Navy-Owned Industrial Waste Treatment Plants (IWTPs).

2. (U) FY2002 PLAN:

(U) (\$2.309M) Ship Maintenance/Repair/Pierside - Complete development of Automated Paint Application with Overspray Capture and Treatment. Complete development of Air Emission Reduction from Shipyard Cutting and Arc-Gouging Operations. Complete development and demonstration of Collection and Treatment of Compwater. Complete evaluation of Advanced Oil Spill Response Equipment. Initiate tasks addressing painting operations at Ship Intermediate Maintenance Activity (SIMA) requirements identified during compliance and pollution prevention studies conducted on Naval Station Mayport (SIMA) as part of Navy Environmental Leadership Program (NELP).

(U) (\$1.822M) Ordnance Testing/Manufacture/Disposal - Complete testing of pilot Exhaust Scrubber for Static Testing of Small Rocket Motors. Continue development of Confined Burn Facility (CBF): complete design of 80lb CBF pilot facility. Initiate tasks for treatment of ammonium perchlorate (AP) wastewaters. Initiate effort for Green Energetic Processing.

R-1 - Item No. 73-16 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 16 of 21)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Pollution Abatement /Y0817

(U) (\$2.308M) Industrial Operations and Maintenance - Complete demonstration of Reduced Air Emissions from Diesel Engines. Complete field demonstration of Biological Detoxification of Oily Sludges. Continue evaluation of Catalysts for Advanced Oxidation Processes (AOP). Conduct field demonstrations for noise reduction of FETC. Initiate tasks for Pollution Prevention (P2) of shoreside industrial operations that address high cost and Notice of Violation (NOV) issues.

(U) (\$0.876M) Installation Restoration - Complete demonstration of electrokinetic destruction of chlorinated solvents. Develop protocol for assessing potential risks to amphibians at Navy sites. Initiate tasks for improving and optimizing remediation strategies and to reduce long-term operation and monitoring costs of installation restoration projects.

(U) (\$1.499M) Coastal Contamination and Contaminated Sediments - Complete demonstration of Biogeochemical Fingerprinting for sediment management. Continue development of Methods to Assess Subsurface Contaminant Migration from Coastal Landfills. Continue evaluations for Fate/Effect of Underwater Unexploded Ordnance (UXO). Initiate task to assess degradation of ordnance compounds in sediments. Initiate site-specific validation methodologies for in-place sediment management.

(U) (\$0.766M) Emissions Detection and Monitoring - Complete demonstration of Real-Time Monitoring of Copper Effluents from dry-dock operations. Complete validation of portable Leak Detections system for Fuel Farms. Complete demonstration of air modeling capability using south coast air basin as case study. Initiate improved monitoring for stormwater assessment.

3. (U) FY2003 PLAN:

(U) (\$1.945M) Ship Maintenance/Repair/Pierside Support - Complete demonstration of Coating Removal from Delicate Substrates. Continue SIMA tasks for improved painting operations. Initiate task for capture of Hydraulic Fluid released during Propeller Maintenance.

(U) (\$1.906M) Ordnance Testing/Manufacture Disposal - Continue development of Exhaust Scrubber for Static Testing of Small Rocket Motors. Continue development of Confined Burn Facility (CBF) to Replace Open Burning of Ordnance and Energetics: complete construction of 80lb CBF facility. Continue ammonium perchlorate (AP) Wastewater Treatment. Continue Green Energetic Processing.

(U) (\$2.643M) Industrial Operations and Maintenance - Conduct demonstrations at IMC test facility. Complete demonstration of Catalysts for Advanced Oxidation Processes (AOP). Continue tasks for P2 of shoreside industrial operations that address high cost and NOV issues.

(U) (\$1.013M) Installation Restoration - Complete development of in-situ sensor for MTBE. Complete and continue demonstrations efforts for reduced remediation and long-term monitoring costs selected by ARTT.

(U) (\$1.759M) Coastal Contamination and Contaminated Sediments - Complete development of Methods to Assess Subsurface Contaminant Migration from Coastal Landfills. Complete assessment of degradation products for ordnance compounds in sediments. Continue site-specific validation methodologies for in-place sediment management. Continue evaluations of Fate/Effect of Underwater UXO.

(U) (\$1.252M) Emissions Detection and Monitoring - Conduct case study simulations using Navy air modeling capability. Continue improved monitoring for stormwater assessment. Initiate evaluation of low cost sensors using molecular imprinting. Initiate development of Real-Time Monitoring of Hydrocarbon Effluents.

R-1 - Item No. 73-17 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 17 of 21)

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, BA4	Environmental Protection / PE0603721N	Pollution Abatement /Y0817

B. (U) Other Program Funding Summary: This project transitions technologies from PE0603712N, Environmental Quality, Logistics Advanced Technology Demonstrations Program, and PE0603716D, the Strategic Environmental Research and Development Program (SERDP). Whenever possible, funding is leveraged by transitioning technologies to PE 0603851D, the Environmental Security Technology Certification Program (ESTCP), for certification and by providing funding for Navy participation in ESTCP projects that could address Navy requirements. Within this program element, the project looks for fund leveraging opportunities with Project S0401 and W2210. Execution of this project is coordinated with related Army and Air Force programs by the Tri-Service Environmental Quality R&D Strategic Plan developed under the leadership of the Joint Engineers Management Panel (JEMP). Additional coordination occurs between the Army, Navy, and Air Force centers for environmental excellence.

(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 Army and Air Force programs by the Tri-Service Environmental Quality R&D Strategic Plan developed under the leadership of the Joint Engineers Management Panel (JEMP).

(U) PE 0602233N, Readiness, Training, and Environmental Quality Technology Development
(U) PE 0603712N, Environmental Quality, Logistics Advanced Technology Demonstrations
(U) PE 0603716D, Strategic Environmental Research & Development Program (SERDP)
(U) PE 0603851D, Environmental Security Technology Certification Program (ESTCP)

C. (U) Acquisition Strategy: This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for Naval stations and other mission funded activities costing over 100K are often procured centrally through the Navy Pollution Prevention Equipment Program (PPEP) where as equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over 100K are procured through their Capital Purchases Program (CPP). For both types of activities, equipment products costing less than 100K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MCON) Program. All these acquisition processes are pursued using a common strategy that satisfies the needs of all the critical stakeholders: 1) Navy end user; 2) Funding sponsor for the Navy end user; 3) Cognizant environmental federal, state, and local regulators; 4) Other stakeholders with cognizance over the Navy process or operation being changed, and 5) The private or government organization that will produce the product.

R-1 - Item No. 73-18 of 73-21

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 18 of 21)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY		February 2002
RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Environmental Protection / PE0603721N	PROJECT NAME AND NUMBER Pollution Abatement /Y0817

D. (U) Schedule Profile:

FY01

Ship Maintenance/Repair/Pierside Support

Comp Dev Air Emission Reduction from Shpyd Cutting & Arc-Grouging Operations
Init Dev Coating Removal from Delicate Substrates

Ordnance Testing/Manufacture/Disposal

Comp Prototype Exhaust Scrubber for Static Testing of Small Rocket Motors

Industrial Operations Maintenance

Comp Validation In-Line Monitoring & Diversion of Problem Contam in Discharges
Comp JETC Emissions Reduction Sub-Scale Tests
Init Tasks for Aircraft Facilities Integrated Maintenance Concept (IMC)
Init Oil Spill Prevention Ashore Effort

Non-Industrial Operations

Comp Subsurface Contam Transport & DNAPL Sensor System
Comp Organic Upgrade for Benthic Flux Sampling Device
Comp Dev of Software Tool for Estimating Remediation Timeframes (ARTT project)
Init Fate/Effects of Underwater UXO
Init Dem/Val Effort for IR - ARTT selected

Hazardous Waste Minimization/Recycling/Disposal

Comp Dev of Collection & Treatment Sys for Compensated Fuel Ballast Water
Comp Val of Chromium Removal/Recovery for Wastewaters
Init Dev of Catalytic Adv Oxid Processes for Organics Destruction

FY02

Ship Maintenance/Repair/Pierside Support

Comp Dev Automated Paint Application with Overspray Caputure and Treatment
Comp Dev/Dem Advanced Oil Spill Equipment
Init Tasks for Improved Paint Operation at SIMAs

Ordnance Testing/Manufacture/Disposal

Comp Design 80lb Confined Burn Pilot System
Init Ammonium Perchlorate Wastewater Treatment
Init Energetic Green Processing

Industrial Operations Maintenance

Comp Biodetoxification of Oily Sludges
Comp Reduced Air Emission from Diesel Engines
Comp JETC Small and Intermediate Scale-Tests
Init Task for P2 Shoreside Industrial Operations

Installation Restoration

Comp Dev of Risk Assessment Protocol for Amphibians (ARTT project)
Comp Val of Electrokinetic Destruction of Chlorinated Solvents (ARTT project)
Init Dem/Val Effort for IR - ART selected

Coastal Contamination and Contaminated Sediments

Comp Val of Sediment Mgmt Using Biogeochemical Fingerprinting
Comp Val of Toxicity Identification Evaluation (TIE) Method for Sediments
Init Ordnance Degradation Studies

Emissions Detection and Monitoring

Comp Dev Real-Time Monitoring of Copper Effluents from Drydocks
Comp Val of Air Pollution Modeling

FY03

Ship Maintenance/Repair/Pierside Support

Comp Dev Coating Removal from Delicate Substrates

Ordnance Testing/Manufacture/Disposal

Comp Construction of 80lb CBF and Init Test/Eval

Industrial Operations Maintenance

Comp Dev of Catalytic Advanced Oxidtion Process for Wastewaters
Demo at IMC Test Facility

Installation Restoration

Comp Val of In-situ MTBE Sensor
Init Dem/Val Effort for IR - ARTT selected

Coastal Contamination and Contaminated Sediments

Comp Dev Coastal Contaminant Migration Monitoring
Comp Assess of Ordnance Degradation of Sediments

Emissions Detection and Monitoring

Conduct Case Study Analysis for Navy Air Pollution Modeling
Init Low Cost Sensors Using Molecular Imprinting

R-1 - Item No. 73-19 of 73-21

Exhibit R-2a, RDT&E Project Justification

(Exhibit R-2a, page 19 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, BA4			Environmental Protection / PE0603721N			Pollution Abatement / Y0817						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ship Maintenance/Repair/&Pierside Support	WR/PO	NSWC/CD	8.013	1.828	10/00	1.824	11/01	1.241	varies	Cont	Cont	N/A
Ship Maintenance/Repair&Pierside Support	WR/PO	NFESC	4.386	0.450	05/01	0.485	11/01	0.704	varies	Cont	Cont	N/A
Ordnance Testing/Manufact/Disp	WR/PO	NSWC/IH	12.688	1.818	10/00	1.822	11/01	1.906	varies	Cont	Cont	N/A
Industrial Operations and Maintenance	WR/PO	NFESC	12.613	1.347	10/00	1.974	12/01	2.382	varies	Cont	Cont	N/A
Industrial Operations and Maintenance	WR/PO	SSC/SD	6.951	0.625	10/00	0.334	12/01	0.261	varies	Cont	Cont	N/A
Non-Industrial Operations	WR/PO	SSC/SD	12.410	1.117	10/00	0.000	12/01	0.000	varies	Cont	Cont	N/A
Non-Industrial Operations	WR/PO	NFESC	6.510	0.705	08/01	0.000	12/01	0.000	varies	Cont	Cont	N/A
Haz Waste Min/Recycle/Disp	WR/PO	NFESC	7.255	0.625	10/00	0.000	12/01	0.000	varies	Cont	Cont	N/A
Haz Waste Min/Recycle/Disp	WR/PO	NRL	2.248	0.182	10/00	0.000	11/01	0.000	varies	Cont	Cont	N/A
Installation Restoration	WR/PO	NFESC				0.876		1.013				
Coastal Contaminants/Contaminated Sed	WR/PO	SSC/SD				1.014		1.160				
Coastal Contaminants/Contaminated Sed	WR/PO	NFESC				0.485		0.599				
Emissions Detection/Monitoring	WR/PO	SSC/SD				0.516		0.705				
Emissions Detection/Monitoring	WR/PO	NFESC				0.250		0.547				
Subtotal Product Development			73.074	8.697		9.580		10.518				
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).												
Total Prior Years Cost: Summation starts with FY80. Subtotal does not include performing activities from prior years that are no longer performing activities.												
Award Dates: About 55% of the project is executed via contracts awarded by the performing activities.												
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	
Remarks: Included in Product Development costs.												

R-1 - Item No. 73-20 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 20 of 21)

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-3, Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N			PROGRAM ELEMENT Environmental Protection / PE0603721N			PROJECT NAME AND NUMBER Pollution Abatement / Y0817						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		
Remarks: Included in Product Development costs.												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			73.074	8.697		9.580		10.518		Cont	Cont	Cont
Remarks:												

R-1 - Item No. 73-21 of 73-21

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 21 of 21)

UNCLASSIFIED

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FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0829 Energy Conservation (ADV)	2,257	2,818	2,858	2,917	2,991	3,039	3,092	CONT.	CONT.
R0838 Mobility Fuels (ADV)	2,151	2,163	2,202	2,239	2,295	2,337	2,378	CONT.	CONT.
R2868 Proton Exchange Membrane (PEM) Fuel Cells	2,903	1,982	-	-	-	-	-	4,885	4,885
TOTAL	7,311	6,963	5,060	5,156	5,286	5,376	5,470	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports projects to evaluate, adapt, and demonstrate energy related technologies for ship and aircraft 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 unnecessarily 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. Project R2868 is an FY2001/FY2002 Congressional plus-up to implement Proton Exchange Membrane (PEM) fuel cell technology at Department of Navy sites. This program, and the companion PE 0604710N, Navy Energy Program (ENG) support 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

UNCLASSIFIED

R-1 Line Item 74

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

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

Naval Operations to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure.

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

(U) PROGRAM CHANGE SUMMARY FOR TOTAL PE:

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
(U) FY 2002 President's Budget:	7,869	5,025	
(U) Adjustments from PRESBUDG:			
(U) Execution Adjustments	-450		
(U) SBIR Adjustment	-108		
(U) Stationary PEM Fuel Cells Cong. Plus-Up		2,000	
(U) Section 8123 Reduction		-62	
(U) FY 2003 President's Budget Submission	7,311	6,963	5,060

(U) CHANGE SUMMARY EXPLANATION:

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

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

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0829	Energy Conservation								
	2,257	2,818	2,858	2,917	2,991	3,039	3,092	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project improves the energy efficiency of Navy ships and aircraft, and thereby contributes to reduced operating costs and improved fleet sustainability and performance. Major efforts include work to increase the efficiency of aircraft engines; and develop improved hull drag reducing technologies and more efficient energy conversion systems for ships.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$600) Aircraft: GE IR&D funds were leveraged to complete aerodynamic design of an advanced energy efficient compressor for the GE23a demonstrator engine. This compressor is sized to provide the airflow needed for a growth F414 engine (+15% thrust, 3-4% improved efficiency) for the F/A-18E/F aircraft. The Energy Program previously funded design of the high-pressure turbine, fan and advanced control system software.
- (U) (\$1,657) Ships: Tow-tank tests of stern flap geometry for LHA-1/LHD-1 classes were conducted; all such testing for existing surface combatants was successfully completed. Evaluated self-polishing reduced copper/cobioicide antifouling hull coatings for copper release and binder hydrolysis rates. Bilge keel panel testing of these coatings was expanded. Performed technology trade-off study to identify commercial technology that could improve LM2500 main propulsion gas turbine engine operation and performance. Evaluated exhaust flow turning techniques to reduce back pressure and improve efficiency of LM2500 engines. Selected materials for DDA-501 turbo-generator anti-degradation compressor blade coating and ceramic turbine blade track.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 3 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROJECT NUMBER: R0829

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

PROJECT TITLE: Energy Conservation (ADV)

2. (U) FY 2002 PLAN:

- (U) (\$600) Aircraft: GE has developed a reduced drag turbine rear frame conceptual design. These funds will begin detailed design of this component which meets growth requirements of the current F414 engine. This component will reduce fuel consumption of the growth engine by 2%, mostly when afterburning.
- (U) (\$2,218) Ships: Evaluate effectiveness and maintenance requirements (application, repair and removal) of self-polishing reduced copper/cobiocide hull coatings. Screen candidate coatings by rates of copper release and binder hydrolysis--best paints will undergo large scale testing in PE 0604710N to demonstrate suitability for Navy use. Continue screening and model testing of simple hydrodynamic mods for future ships to improve energy efficiency: complete LSD-41/LSD-49 stern flap model tests. Complete technology application study to identify cost effective improvements for 501-K17/34 ship service turbo-generators. Add performance algorithms to digital engine controls/fuel control system (being developed by LM2500 Life Cycle Manager for condition based maintenance) to enable condition based operation. Select materials for anti-degradation coating for LM2500 compressor; evaluate available materials for turbine applications.

3. (U) FY 2003 PLAN:

- (U) (\$1,050) Aircraft: Complete detailed design of the turbine rear frame for a growth F414 engine and support prototype fabrication and rig testing.
- (U) (\$1,808) Ships: Continue screening of self-polishing reduced copper/cobiocide coatings (and other advanced antifouling coatings) through laboratory tests of toxicant and binder release rates, and exposure testing on panels to determine application, maintenance and performance characteristics. Select promising candidates for large-scale testing via PE 0604710N. Develop improved correlations between model and full-scale tests for hull drag reducing appendages. Evaluate bow-fins for TA0-187 class ships. Evaluate benefits of digital fuel controls, condition based operation, improved inlet flow and other cost-effective improvements for both 501-K34 turbogenerator and LM2500 main propulsion gas turbines. Evaluate electronic control system for FFG-7 diesel generators.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 4 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROJECT NUMBER: R0829

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

PROJECT TITLE: Energy Conservation (ADV)

(U) RELATED RDT&E:

- (U) PE 0601153N (Defense Research Sciences)
- (U) PE 0602236N (Warfighter Sustainment Applied Research)
- (U) PE 0603236N (Warfighter Sustainment Advanced Technology)
- (U) PE 0603513N (Shipboard Systems Component Development)
- (U) PE 0603573N (Advanced Surface Machinery Systems)
- (U) PE 0603721N (Environmental Protection)
- (U) PE 0604710N (Navy Energy Program (ENG))

D. (U) SCHEDULE PROFILE: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 5 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N PROJECT NUMBER: R0829
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) PROJECT TITLE: Energy Conservation (ADV)

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
a. System Development and Integration	2,257	2,818	2,858

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-3, page 6 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0838	Mobility Fuels (ADV)								
	2,151	2,163	2,202	2,239	2,295	2,337	2,378	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides data through engine and fuel system tests which relate the effects of changes in Navy fuel procurement specification properties to the performance and reliability of Naval ship and aircraft engines and fuel systems. This information is required to: (a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military specification fuels are unavailable or in short supply; and (c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry. Recent problems with fuel quality have adversely affected ship and aircraft system performance and reliability and resulted in degradation of fuel in storage. The resulting readiness impacts, additional maintenance costs, and the cost of lost equipment, although difficult to quantify, are many times the cost of this project. 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 \$2B per year to procure, transport, store and consume and are essential to fleet operations.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 7 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROJECT NUMBER: R0838

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

PROJECT TITLE: Mobility Fuels (ADV)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 Accomplishments:

- (U) (\$990) Ships: Continued gas turbine engine, high-and medium-speed diesel engine fuel injection systems, and shipboard fuel handling systems component tests with low lubricity ship diesel fuels to determine effects on durability. Initiated evaluation of lubricity enhancing additives for use with low-lubricity ship diesel fuels. Completed Phase I task (availability and cost issues for JP-5) to determine the feasibility of specifying JP-5 as the single fuel for use by all Naval systems (ships, aircraft and ground equipment). Initiated Phase II task (engine and fuel systems hardware maintenance issues, operational and shipboard impacts) to determine the feasibility of specifying JP-5 as the single fuel. Initiated work to quantify effects of low thermal stability Navy distillate fuels on maintenance requirements for navy gas turbine and diesel engines.
- (U) (\$1,161) Aircraft: Initiated evaluation of the impact of copper contaminated fuel and +100 thermal stability improving additives on Naval Joint Strike Fighter engine performance and maintenance requirements. Initiated development of improved test devices for shipboard fuel contamination and water detection. Conducted field testing of prototype copper contamination removal system. Initiated field evaluation of +100 additive compatible shipboard fuel/water separator elements. Completed evaluation of effects of +100 additive on F/A-18E/F and AV-8B engine systems.

2. (U) FY 2002 Plan:

- (U) (\$976) Ships: Complete testing of Navy gas turbine, high-and medium-speed diesel engine fuel injection systems, and shipboard fuel handling systems with low-lubricity ship diesel fuels. Use results to specify minimum lubricity levels and test methods to be used for fuel acceptance. Complete evaluation of lubricity enhancing additives for use with Navy distillate fuels. Continue component tests to determine effects of low thermal stability Navy distillate fuels on maintenance requirements for Navy gas turbine and diesel engines. Continue phase II assessment of the feasibility of specifying JP-5 as the single fuel for use by all Naval Systems (ships, aircraft. and ground equipment).
- (U) (\$1,187) Aircraft: Conduct evaluation of copper contamination removal system. Complete evaluation of the impact of copper contaminated fuel and +100 additives on Naval Joint Strike Fighter engine performance and maintenance requirements. Initiate JP-5 specification requirements and specification test review to determine and remove

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 8 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROJECT NUMBER: R0838

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

PROJECT TITLE: Mobility Fuels (ADV)

unnecessary requirements and increase worldwide availability. Evaluate prototype shipboard fuel contamination and free water detection equipment. Continue T45 +100 additive field evaluation.

3. (U) FY 2003 PLAN:

- (U) (\$1,000) Ships: Complete testing of Navy gas turbine, high-and medium-speed diesel engine fuel injection systems, and shipboard fuel handling systems with low-lubricity ship diesel fuels. Use results to specify minimum lubricity levels and test methods to be used for fuel acceptance. Continue component tests to determine effects of low thermal stability Navy distillate fuels on maintenance requirements for Navy gas turbine and diesel engines. Complete assessment of the feasibility of specifying JP-5 as the single fuel for use by all Naval Systems (ships, aircraft and ground equipment).
- (U) (\$1,202) Aircraft: Complete shipboard evaluation of copper contamination removal system. Complete JP-5 specification requirements and specification test review to determine and remove unnecessary requirements and increase worldwide availability. Evaluate impact of Tischer-Tropsch produced, and other non-petroleum derived jet fuels on Naval aircraft engines and fuel systems.
-

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

(U) PE 0601152N (In-House Laboratory Independent Research)

(U) PE 0205632N (Aviation Improvements)

D. (U) SCHEDULE PROFILE: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-2, page 9 of 10)

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603724N

PROJECT NUMBER: R0838

PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

PROJECT TITLE: Mobility Fuels (ADV)

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
a. Reliability, Maintainability, and Availability	2,151	2,163	2,202

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: Not applicable.

UNCLASSIFIED

R-1 Line Item 74

Budget Item Justification
(Exhibit R-3, page 10 of 10)

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification Sheet							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4		PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N				PROJECT NAME AND NUMBER Navy Facilities System/Y0995				
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost		1.807	1.713	2.124	1.819	1.856	1.843	1.865		
Navy Facilities System/Y0995		1.807	1.713	2.124	1.819	1.856	1.843	1.865	Cont.	Cont.
RDT&E Articles Qty		5	5	6	TBD	TBD	TBD	TBD	NA	NA

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides the Navy with new civil engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available resources on satisfying facility requirements where the Navy is a major stakeholder. There are no test validated Commercial off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which includes the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facility requirements during the fiscal years FY 2001 through FY2003: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the 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."

B. (U) PROGRAM CHANGE SUMMARY:

	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	1.807	1.728	
(U) Appropriated Value:	1.807	1.728	
(U) Adjustments to FY2002/2003 President's Budget:		-0.015	
(U) FY 2003 Pres Budget Submit:	1.807	1.713	2.124

CHANGE SUMMARY EXPLANATION

(U) FY01: N/A

(U) FY02: Management reduction of \$15K.

(U) Schedule: N/A

(U) Technical: N/A

C. (U) OTHER PROGRAM FUNDING SUMMARY: Provided in Project Y0995 R-2a

D. (U) ACQUISITION STRATEGY: Provided in Project Y0995 R-2a

E. (U) SCHEDULE PROFILE: Provided in Project Y0995 R-2a

R-1 - Item No. 75-1 of 75-8

Exhibit R-2, RDT&E Budget Item Justification Sheet
(Exhibit R-2, page 1 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4		PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N				PROJECT NAME AND NUMBER Navy Facilities System/Y0995				
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Navy Facilities System/Y0995		1.807	1.713	2.124	1.819	1.856	1.843	1.865	Cont.	Cont.
RDT&E Articles Qty		5	5	6	TBD	TBD	TBD	TBD	NA	NA
<p>A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 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. And where there are no test validated Commercial off the Shelf (COTS) solutions available, and a timely solution will not emerge without Navy sponsored demonstration and validation. The program completes the development through demonstration and test validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which include the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST) and industry. Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment, Restoration and Modernization Programs. This project is addressing three Navy facility requirements during the fiscal years FY 2001 through FY2003:</p> <p>(U) WATERFRONT FACILITIES REPAIR AND UPGRADE</p> <p>(U) Over 75% of the Navy's waterfront facilities are over 42 years old. They were designed for a service life of no more that 25 years and to satisfy the mission requirements existing at that time of construction. The reinforced concrete used to construct nearly all of them 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 110 tons when they were originally designed for no concentrated loads. This effort addresses new materials and design methods to extend the service life of existing waterfront facilities by an additional 15 or more years, and a new method to cost effectively upgrade the pier load capacity without resorting to demolition and replacement. Specific benefits include increasing the durability of concrete pier repairs from 3 to 15 +years for conventional concrete patches and composite enhanced repairs respectively, new longer-lasting low-maintenance fendering systems that eliminate the need for the frequent replacement of timber piles, a new Impulse Load Method (ILM) for accurately and quickly determining the vertical load capacity of piers and wharves, a new Swinging Weight Deflectometer (SWD) technique to determine the lateral stability of piers for earthquake forces and docking ship's impact. In total, for \$1-2M of repairs and upgrades per pier, using this new technology, \$50M for demolition and replacement is avoided.</p> <p>(U) FACILITY TECHNOLOGIES TO REDUCE THE COST OF SUSTAINMENT, RESTORATION AND MODERNIZATION (SRM)</p> <p>(U) The costs to correct these critical facility backlog deficiencies are over \$3.1B as reported in the FY 2000 Annual Inspection Summary (AIS). Current Navy SRM funding levels are insufficient to prevent the continued growth of the backlog of mission and safety critical maintenance and repairs. This effort will demonstrate and clearly validate the cost and reliability of advanced technologies in order to assure their acceptance and implementation in traditionally conservative public works and maintenance 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 SRM backlog by technology to reduce the frequency of failures and repair costs. Estimated returns on these investments are better than 100 to 1.</p>										

R-1 - Item No. 75-2 of 75-8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 2 of 8)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N	PROJECT NAME AND NUMBER Navy Facilities System/Y0995
<p>(U) MODULAR HYBRID PIER.</p> <p>(U) Modular Hybrid Pier, originally programmed for FY 02 start, must now be started in FY03 to achieve completions required by construction acquisition schedules.</p> <p>The Navy is faced with the necessity of recapitalizing a large portion of its waterfront infrastructure over the next several decades. The Modular Hybrid Pier initiative develops and validates innovative material and design technologies for a mission-flexible waterfront infrastructure characterized by significantly reduced life cycle costs and increasing mission flexibility. The concepts validated by this project's Waterfront Facilities Repair and Upgrade initiative will enable the Navy to build new piers and to economically extend the useful service life of many existing piers and wharves. While reducing the need for immediate replacement, eventual replacement will be required. Emerging innovative structural and materials technologies, particularly those that will transition from the Navy's applied research and advanced development program, will help provide enhanced capability replacement structures that have a comparable initial cost yet have far less maintenance and repair costs. Use of composite materials and high strength light-weight concrete will produce structures that have twice the structural service life of the structures that they will replace. Modular design will enable off-site fabrication that will shorten the duration and lower the cost of the on-site construction. Modular design will vastly improve the durability quality because of precasting and yard assembly practices; it will also facilitate change-out of components to repair damage or to modify structure geometry or capacity to adapt to future changes in ship designs. Mobility of barge size modules through flotation is a significant new capability option to save money and provide new military worth. An economic analysis has shown that a modular hybrid (deployable) pier will have a Net Present Value (NPV) cost that is \$18M less over its service life than that for a conventional pier constructed of ordinary reinforced concrete.</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <p>(U) (\$0.427M) Waterfront Repair and Upgrade- Initiated repair and strengthening validation tests at SUBASE Bangor Marginal Wharf using advanced composite material systems to validate performance in cold/wet environment. Work under contract awarded FY00 to Sargent Inc. delayed by inclement weather and local regulation mandated work "window" for salmon protection. On site work started June 01 with scheduled completion in October 2001. Conducted operational test and evaluation of "Universal" Submarine Camel with successful multiple dockings of Seawolf submarine at pier of SUBASE New London. Sub Camel constructed of non-corroding composites has potential return on investment of 32:1 (\$33M life cycle savings) compared with current steel camels. Camel design prevents contact with and damage to wide aperture arrays of Seawolf, Virginia and 688 class subs during berthing operations. Camel design modified to reduce acquisition cost and to facilitate transportation. Initiated validation testing of "Swinging Weight" pendulum system to assess lateral load capacity of piers.</p> <p>(U) (\$1.380M) Sustainment, Restoration and Modernization Technology - Continued performance evaluation of F/A-18 jet-exhaust-resistant pavements at NAS Oceana. Demonstrated construction of thin film hangar floor coating systems at NAS Lemoore and NAS Misawa. Provided data for Unified Facilities Guide Specifications 09611 and 09612 for safe and durable hangar floor coatings. Initiated demonstration of Roofing Maintenance Management System at NAVSTA Bremerton and Puget Sound NSY. Demonstrated constructability of concrete (containing high percentage of fly ash that increases durability) in piling fabricated for new Pier D at NAVSTA Bremerton. Demonstrated at NSA Mid South an automated 4-fold procedure for collecting pavement condition data. This will enable more efficient management of street and road pavement maintenance. Initiated DEMVAL of airfield markings containing recycled (less expensive) glass beads that provide requisite reflectivity. Demonstrated highly durable moisture-cured urethane (MCU) coating on steel water tank at NWS Seal Beach. Initiated DEMVAL of rapid techniques to non-destructively determine in-situ length of concrete pier piling to provide information for load assessments and dredging plans. Initiated DEMVAL of methods for encasement of concrete pier piles in composite shells to remediate loss of structural capacity from alkali silica and ettringite reactions. Initiated DEMVAL of heat resistant joint sealants for airfield pavements. Initiated DEMVAL of durable coating for corrosion protection of steel structures in waterfront splash zones.</p>		

R-1 - Item No.75-3 of 75-8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 8)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N	PROJECT NAME AND NUMBER Navy Facilities System/Y0995
<p>2. (U) FY 2002 PLAN:</p> <p>(U) (\$0.480M) Waterfront Repair and Upgrade - Complete test and evaluation of pier repair and strengthening systems at SUBASE Bangor Marginal Wharf. Complete validation testing and evaluation of Swinging Weight Deflectometer method for determining the remaining strength of piers to resist lateral loads from berthing ships. Initiate testing of agents to reduce the penetration rates of the chloride ion that causes corrosion.</p> <p>(U) (\$1.233M) Sustainment, Restoration and Modernization Technology - Complete testing or roof inspection and assessment. Complete NDE for measuring depth of embedment of concrete foundation piles. Continue measuring stresses of decomposing concrete on pile encasement. Initiate accelerated testing of "hybrid metallic reinforcement of concrete. Initiate testing acrylic elastomeric coatings for steel. Initiate testing flexible (non-cracking) airfield pavement marking paints. Test promising methods to improve underwater and inspection accuracy and efficiency by 10%. Complete testing of high heat resistant A/C pavement joint sealants. Complete application of durable coatings for steel in the splash zone. Continue performance testing of concrete with high-fly-ash content.</p> <p>3. (U) FY 2003 PLAN:</p> <p>(U) (\$0.300M) Waterfront Repair and Upgrade - Continue testing agents to reduce chloride ion penetration rates into concrete.</p> <p>(U) (\$0.724M) Sustainment, Restoration and Modernization (SRM) Technology Reduction - Complete testing of pile encasement to extend life of decomposing concrete. Continue testing (and interim validation) of hybrid metallic reinforcement of concrete. Continue testing (and interim validation) of acrylic elastomeric coating on steel. Continue testing (and interim validation) of flexible (non-cracking) airfield pavement paints. Continue testing of underwater inspection methods/concepts. Continue evaluation (and interim validation) of durable coatings for steel in the splash zone. Complete validation of high temperature pavement joint sealants. Complete validation of high-fly-ash-content concrete.</p> <p>(U) (\$1.100M) Modular Hybrid Pier - The development and validation of a double deck, floating relocatable pier with highly durable concrete, appropriate composite reinforcement and passivated (protected) high strength post tensioning and having maintainability and operability features for economy and efficiency. The DEMVAL will include the latest to emerge technologies that can be validated by FY2005. The objective is to enable the maximum reduction in the total ownership cost of piers/waterfronts.</p>		

R-1 - Item No.75-4 of 75-8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4	PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N	PROJECT NAME AND NUMBER Navy Facilities System/Y0995
<p>B. (U) OTHER PROGRAM FUNDING SUMMARY: This project transitions waterfront facilities technology from applied research and advanced development programs PE0602234N, Materials, Electronics and Computer Technology, PE 0602236N, 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) and the Composites Institute (CI) of The Society of the Plastics Industry (SPI). The project pursues opportunities to leverage Navy Sustainment, Restoration and Modernization and Military Construction (MILCON) investment through partnerships with SRM and MILCON program and project managers .</p> <p>C. (U) ACQUISITION STRATEGY: This project is categorized as Non-ACAT (Non Acquisition). The know-how produced from this project enables the safe and cost effective application of emerging/advanced technology concepts and products: 1) specifying or describing the performance, 2) enabling innovative design applications, 3) enabling quality control/quality assurance during constructions, 4) enabling reliability and maintainability during operations, and 5)developing lifecycle cost projections and environmental sustainability life cycle data for Navy policy guidance and criteria serving the Navy Sustainment, Restoration and Modernization and Military Construction (MILCON) programs. The data from this program enables earliest and safe utilization of advanced technology for cost avoidance in the facilities infrastructure. The technical know-how of this program is transferred to the construction industry in supporting Navy construction and maintenance through the inclusion of individual firms (using competitive selection processes) and industry organizations/associations in the development and testing activities.</p>		

R-1 - Item No. 75-5 of 75-8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 8)

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CLASSIFICATION:			UNCLASSIFIED		
EXHIBIT R-2a, RDT&E Project Justification				DATE:	
				February 2002	
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA4		PROGRAM ELEMENT NAME AND NUMBER Facilities Improvement / PE0603725N		PROJECT NAME AND NUMBER Navy Facilities System/Y0995	
D. (U) SCHEDULE PROFILE:					
FY01		FY02		FY03	
<u>Waterfront Facilities Repair and Upgrade</u>		<u>Waterfront Facilities Repair and Upgrade</u>		<u>Waterfront Facilities Repair and Upgrade</u>	
Initiated validation test of composite materials for repair and strengthening of piers at SUBASE bangor.		Complete performance validation of composites in SUBASE. Complete Swinging Weight Deflectometer for assessing repairing pier load/strength capacity.		Continue testing agents to reduce chloride penetration rates.	
Initiated testing of swinging weight deflectometer (SWD) for assessing pier load capacity.		Initiate testing of agents to reduce corrosion inducing chloride ion penetration rates.			
<u>Sustainment, Restoration and Modernization Technology</u>		<u>Sustainment, Restoration and Modernization Technology</u>		<u>Sustainment, Restoration and Modernization Technology</u>	
Completed validation of: moisture cured urethanes (MCU) safety coatings for hangar floors; auto pavement condition index.		Complete testing of roof inspection and assessment.		Complete testing pile encasement to extend life of decomposing concrete.	
Initiated testing of roof inspection and assessment process.		Complete NDE for measuring depth of embedment of concrete foundation piles.		Continue testing (and interim validation) of hybrid metallic reinforcement concrete.	
Initiate testing of NDE for determining concrete foundation pile embedment length and condition measuring.		Continue measuring stresses of decomposing concrete on pile encasement.		Continue testing of (and interim validation) of acrylic elastomeric coating on steel.	
Initiated testing of concrete pile encasement to arrest/slowdown concrete decomposition due to alkali-silica reactions.		Initiate accelerated testing of "hybrid" metallic reinforcement of concrete.		Continue testing (and interim validation) of flexible (non-cracking) airfield pavement paints.	
Initiated search for better methods for underwater inspection by divers.		Initiate testing acrylic elastomeric coatings for steel.		Continue testing of underwater and surface inspection methods/concepts.	
Initiated testing of heat resistant aircraft pavement joint sealants.		Initiate testing flexible (non-cracking) airfield pavement marking paints.		Continue evaluation (and interim validation) of durable coatings for steel in the splash zone.	
Initiated testing of durable coatings for steel in the splash zone.		Test promising methods to improve underwater and surface inspection accuracy and efficiency.		Complete validation of high temperature pavement joint sealants.	
Continued testing of concrete with high-fly ash content in marine settings.		Complete testing of high heat resistant A/C pavement joint sealants.		Complete validation of high-fly-ash content concrete.	
		Complete application of durable coatings for steel in the splash zone.			
		Continue performance testing of concrete with high-fly-ash content.			
				<u>Modular Hybrid Pier</u>	
				Initiate fabrication long lead test articles.	
				Initiate simulation and physical testing.	
All results transition to engineering criteria and performance specifications for competitive procurement of maintenance and construction projects.		All results transition to engineering criteria and performance specifications for competitive procurement of maintenance and construction projects.		All results transition to engineering criteria and performance specifications for competitive procurement of maintenance and construction projects.	

R-1 - Item No.75-6 of 75-8

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 6 of 8)

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Exhibit R-3 Cost Analysis (page 1)									DATE:			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NAME AND NUMBER					
RDT&E, BA4			Facilities Improvement / PE0603725N				Navy Facilities System/Y0995					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY01 Cost	FY01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
High Performance (HP) Magazine	WX	NFESC Pt. Hueneme, CA	4.090									
	WR	NSWC Indian Head, MD	0.045									
	RC	LANTDIV Norfolk, VA	0.349									
	WR	Navy PHS&T Earle, NJ	0.070									
	FP	Ricarl Design Camarillo, CA	0.019									
	FP	SVERDRUP St. Louis, MO	0.261									
Waterfront Facilities Repair and Upgrade	WX	NFESC Pt. Hueneme, CA	1.228	0.315	10/00	0.330	10/01	0.300	cont.	cont.	cont.	na
	WR	NUWC New London, CT	0.687									
	WR	EFANW Poulsbo, WA		0.012	05/01							
	FP	Contractors TBD Locations TBD	0.331	0.100	09/01	0.150	06/02					
Sustainment, Restoration and Moderization Technology	WX	NFESC Pt. Hueneme, CA	2.081	0.986	10/00	0.715	10/01	0.724	11/02	nominal varies	cont.	na
	FP	CERF,Wash, DC	0.045									
	RC	LANTDIV	0.027	0.013	05/01							
	RC	NAS Misawa		0.030	05/01							
	WR	SWDIV		0.002	03/01							
	RC	SOUTHDIV		0.021	05/01							
	FP	Han Padron Inc.		0.018	03/01							
	RC	FACCO Port Hueneme, CA		0.060	05/01							
	FP	N. State Univ. Aberdeen, SD	0.042									
	WR	PWD,NWS Charleston,SC	0.081									
	FP	Contractors TBD Locations TBD		0.250	09/01	0.518	03/02			cont.	cont.	na
Modular Hybrid Pier	WR	NFESC										
		Pt. Hueneme, CA						1.100	12/02	cont.	cont.	na
Subtotal Product Development			9.356	1.807		1.713		2.124				

Remarks:

Total Prior Years Cost: Summation starts with FY94. Subtotal does not include performing activities from prior years that are no longer performing activities.

R-1 - Item No. 75-7 of 75-8

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 8)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N			PROGRAM ELEMENT Facilities Improvement / PE0603725N				PROJECT NAME AND NUMBER Navy Facilities System/Y0995					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		
Remarks: Included in Product Development costs.												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			9.356	1.807		1.713		2.124			Cont.	Cont.
Remarks:												

R-1 - Item No.75-8 of 75-8

Exhibit R-3, Project Cost Analysis
Exhibit R-3, page 8 of 8)

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EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603739N Navy Logistic Productivity					
COST (\$ in Millions)	Prior Year Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE0603739N Cost		17.426	14.500	31.653	13.023	8.233	8.290	7.563	6.899	Continuing	Continuing
T1886 Rapid Retargeting *	2.905	6.778	5.293	4.262	4.900						24.138
T2767 Virtual Systems Implementation Program **		6.776	5.815	6.740							19.331
T2769 Compatible Processor Upgrade Program ***		3.872	3.392	2.478							9.742
T2920 Ordnance Management				7.370	4.546	4.656	4.726	4.004	3.246		28.548
											0.000
W2955 JEDMICS				4.261	3.577	3.577	3.564	3.559	3.653	7.515	29.706
W9047 JEDMICS Enhancements				4.857							4.857
W9048 JEDMICS Security				1.685							1.685
Quantity of RDT&E Articles	Not Applicable										
<p>* Rapid Retargeting is a Congressional add executed under project unit T1886 in FY 2000 , FY 2001 and FY 2002.</p> <p>** Virtual Systems Implementation Program is a Congressional add executed under project unit T2767 in FY2000, FY 2001, and FY 2002.</p> <p>*** Compatible Processor Upgrade Program is a Congressional add executed under project unit T2769 in FY 2000 , FY 2001, and FY 2002.</p> <p>(U) 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. As of April 2000, the Joint Engineering Data Management Information & Control System (JEDMICS) program manages and controls 78,500,000 engineering images and has 32,000 authorized users responsible for over 70,000 user sessions per month. Over 2 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 29 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) evaluation, integration, and test and evaluation. JEDMICS funds development efforts which are required to integrate COTS upgrades.</p> <p>In addition this program covers the conversion of Naval Ammunition Logistics Center(NALC) systems to the Ordnance Information Systems(OIS).</p> <p>These upgrades were previously procured with Operation and Maintenance, Navy funding. Funding has been moved to RDT&E,N to comply with 28 Oct 99 OSD Comptroller and 2 Nov 99 ASN(FMC) direction clarifying use of RDT&E funds.</p> <p>(U) B. JUSTIFICATION OF BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION, which develops and integrates hardware for experimental tests related to specific ship or aircraft applications.</p>											

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 1 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T1886 Rapid Retargeting						
COST (\$ in Millions)		Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost		9.683		5.293	4.220							19.196
RDT&E Articles Qty												
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Rapid Retargeting (RRT) is a new design process which will provide the technology to eliminate obsolete components and reduce multiple electronic modules into a single, programmable design. This process will also be employed to replace many standard module types with programmable COTS components thus greatly reducing shipboard sparing requirements.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS: -(U) (\$3.468) NAVSUP is targeting the use of RRT technology over several areas in FY01. First, we're working to prototype the application of RRT techniques in the digital Standard Electronic Module (SEM) arena. Basically, SEMs are common modules used in multiple weapons system to standardize hardware and reduce logistics support costs. We've never demonstrated that RRT works in the SEM world through the production phase, so this effort will actually result in production of working retargeted hardware that can be tested and then fielded. The retargeted product will have all the advantages of RRT in having the item functionality modeled in VHDL so that it's capable of being continually re-used to resolve emergent obsolescence issues. We're planning to use FY01 funds to retarget three specific digital circuit cards...NSNs 3N 5963-01-029-3142, 3N 5963-023-9401, and 3N 5963-01-024-0980...which are used in a variety of prominent Navy weapons systems, including the BSY-1, BQQ-5, BQQ-6, BQQ-10, SQQ-89, SQS-53, SQS-56 and SPN-46. Completion of this initiative will have significant benefit to the Navy in terms of obsolescence avoidance and total ownership cost reduction. Besides this SEM initiative, we're also targeting specific components within several new weapons systems for application of RRT using FY01 funding. These include the MK86 Gun Fire Control System, the AN/UYS-2A Enhanced Modular Signal Processor, and the AN/SQQ-89 Sonar. Each of these systems has components which have been identified as having obsolescence problems, and the retargeting process will be used to resolve the obsolescence issues.</p> <p> -(U) (\$1.825) Supported Automated Tracking Ordnance System (ATOS)/Radio Frequency Identification Advanced Concept Technology Demonstration program.</p> <p>2. FY 2002 PLANS: -(U) (\$4.220) FY 02 funding will be used to continue reducing shipboard sparing requirements.</p> <p>3. FY 2003 PLANS: Not applicable -(U) (\$4.900) FY 03 Completes ATOS/Radio Frequency Identification Advanced Concept Technology Demonstration program.</p>												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity		PROJECT NUMBER AND NAME T1886 Rapid Retargeting			

(U) B. PROGRAM CHANGE SUMMARY:

	FY2001	FY2002	FY2003
(U) FY 2002 President's Budget:	3.468	0.000	4.900
(U) Adjustments from the FY 2002 President's Budget:	1.825	4.220	0.000
(U) FY 2003 President's Budget Submit:	5.293	4.220	4.900

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 2001 net increase of \$1.825 million reflects an increase of \$1.900 for the Automated Tracking Ordnance System (ATOS) and a decrease of \$.075 million for a Small Business Innovative Research assessment. FY2002 increase is a Congressional Plus-up.

(U) Schedule: Not applicable

(U) Technical: Not applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
(U) E. SCHEDULE PROFILE: Not applicable. RDTE 0603570D Proj: P523		1.000	.600	.620	.620		

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 3 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T1886 Rapid Retargeting						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support Equipment				1.825							1.825	
Software Development	CPFF	TITAN/VISICOM CA	8.908	3.191	08/01	3.882	***				15.981	15.981
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			8.908	5.016		3.882		0.000		0.000	17.806	
Remarks: *** Based on release of funds by OSD												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTEEN Budget Item Justification
(Exhibit R-2, page 4 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			T1886 Rapid Retargeting						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	NAVSUP Mechanicsburg PA	0.775	0.277	09/01	0.338	***				1.390	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.775	0.277		0.338		0.000		0.000	1.390	
Remarks:												
Total Cost			9.683	5.293		4.220		0.000		0.000	19.196	

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 5 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T9049 Advanced Technology Ordnance Surveillance						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	FPFF	TBD									0.000	
Ancillary Hardware Development											0.000	
Systems Engineering	IDIQ	TBD						0.400	10/02		0.400	0.400
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.400		0.000	0.400	
Remarks: ATOS is a COTS systems that combines tags, readers, and software for a military application.												
Development Support Equipment											0.000	
Software Development	IDIQ	TBD						0.375	01/03		0.375	0.375
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		0.375		0.000	0.375	
Remarks:												

R-1 SHOPPING LIST - Iter 77

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 6 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDTE, BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T9049 Advanced Technology Ordnance Surveillance						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	IDIQ	TBD						0.192	03/03		0.192	0.192
Operational Test & Evaluation	IDIQ	TBD						0.186	06/03		0.186	0.186
Tooling											0.000	
GFE	IDIQ	NAVSEA Indian Head						0.210	03/03		0.210	0.210
Subtotal T&E			0.000	0.000		0.000		0.588		0.000	0.588	
Remarks:												
Contractor Engineering Support	IDIQ	TBD						0.927	01/03		0.927	0.927
Government Engineering Support								1.312	10/02		1.312	
Program Management Support	GSA	Logmation						1.223	10/02		1.223	
Travel	GSA	Logmation						0.050	10/02		0.050	
Labor (Research Personnel)	MIPR	NAVSEA PHST						0.025	12/02		0.025	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.000		3.537		0.000	3.537	
Remarks:												
Total Cost			#REF!	#REF!		#REF!		#REF!		#REF!	#REF!	
Remarks:												

R-1 SHOPPING LIST - Iter 77

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 7 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																									
APPROPRIATION/BUDGET ACTIVITY RDTE, BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME T9049 Advanced Technology Ordnance Surveillance																									
<p>(U) D. ACQUISITION STRATEGY: * Contracting is via an IDIQ vehicle for engineering services. Using this vehicle we will have access to various subvendors for NRE. Hardware will be purchased on a separate FPFF contract.</p> <p>(U) E. SCHEDULE PROFILE:</p> <table border="1"> <thead> <tr> <th></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>TO COMPLETE</u></th> </tr> </thead> <tbody> <tr> <td>(U) Program Milestones</td> <td></td> <td></td> <td> Feb 03 ACTD Oversight Review Transition Apr 03 Team Meeting WSERB Approval Jun 03 Finalize Transition Plan </td> <td></td> </tr> <tr> <td>(U) Engineering Milestones</td> <td></td> <td></td> <td> May 03 HERO Certification </td> <td></td> </tr> <tr> <td>(U) T&E Milestones</td> <td></td> <td></td> <td> Jan 03 Tech Eval Jun 03 Ship and CONUS Demonstrat ion Jul 03 OCONUS Demonstration Sep 03 Military Utility Assessment </td> <td></td> </tr> <tr> <td>(U) Contract Milestones</td> <td></td> <td></td> <td> Dec 02 LRIP Delivery May 03 Final Delivery </td> <td></td> </tr> </tbody> </table>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>	(U) Program Milestones			Feb 03 ACTD Oversight Review Transition Apr 03 Team Meeting WSERB Approval Jun 03 Finalize Transition Plan		(U) Engineering Milestones			May 03 HERO Certification		(U) T&E Milestones			Jan 03 Tech Eval Jun 03 Ship and CONUS Demonstrat ion Jul 03 OCONUS Demonstration Sep 03 Military Utility Assessment		(U) Contract Milestones			Dec 02 LRIP Delivery May 03 Final Delivery	
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>																							
(U) Program Milestones			Feb 03 ACTD Oversight Review Transition Apr 03 Team Meeting WSERB Approval Jun 03 Finalize Transition Plan																								
(U) Engineering Milestones			May 03 HERO Certification																								
(U) T&E Milestones			Jan 03 Tech Eval Jun 03 Ship and CONUS Demonstrat ion Jul 03 OCONUS Demonstration Sep 03 Military Utility Assessment																								
(U) Contract Milestones			Dec 02 LRIP Delivery May 03 Final Delivery																								

R-1 SHOPPING LIST - Iter 77

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 8 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2767 Virtual Systems Implementation Program					
COST (\$ in Millions)	Prior Years Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost		6.776	5.815	6.740							19.331
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Virtual Systems Implementation Program (VSIP) will allow for the implementation of legacy and future systems with open systems architecture and industry standards. VSIP will allow for the introduction of tools and processes that will provide for prototype development of engineering and logistics solutions for Navy systems experiencing obsolescence and logistics/supply support problems. VSIP will integrate system level simulation and advanced modeling techniques that will capture complex system functions and automatically define systems requirements including performance and availability.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <p>- (U) (\$5.815) Funding was used to complete the proof of concept for VSIP and put the initial applications into production. The two applications that were fielded this year are:</p> <p>The Configuration and Technical Notification Program (CaTNP), which provides data from approved engineering changes to DLA so that the impact of those changes can be considered in the material procurement process, will be brought into initial production at NAVICP (both Philadelphia and Mechanicsburg) and the Defense Supply Centers (DSCs). This will allow the DSCs to have rapid visibility of design changes which will allow them to avoid buying unneeded legacy components, thus potentially saving the government considerable money. Additional CaTNP functionality was added at NAVICP to integrate the CaTNP capabilities with legacy NAVICP technical support personnel work processes. A similar effort was made to integrate CaTNP functionality with the legacy DSC work flow.</p> <p>The Consumable Metrics Monitoring System (CMMS) is a tool which will measure consumable supply effectiveness at the organization and region levels. We already have this capability at the wholesale level, but our ability to get the complete picture of consumable item supply effectiveness at the consumer level is limited. CMMS was developed and fielded with FY01 VSIP funding.</p> <p>2. FY 2002 PLANS:</p> <p>- (U) (\$6.740) Funding will be used to advance the progress made in FY 01.</p> <p>3. FY 2003 PLANS: Not applicable.</p>											

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME T2767 Virtual Systems Implementation Program																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;">FY2001</th><th style="text-align: center;">FY2002</th><th style="text-align: center;">FY2003</th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">5.945</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td></tr><tr><td>(U) Adjustments from the FY 2001 President's Budget:</td><td style="text-align: center;">-0.130</td><td style="text-align: center;">6.740</td><td style="text-align: center;">0.000</td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">5.815</td><td style="text-align: center;">6.740</td><td style="text-align: center;">0.000</td></tr></tbody></table> <p>CHANGE SUMMARY EXPLANATION:</p> <p style="margin-left: 40px;">(U) Funding: FY 2001 decrease of \$1.30 million reflects a Small Business Innovative Research assessment. FY 2002 increase is a Congressional Plus-up.</p> <p style="margin-left: 40px;">(U) Schedule: Not applicable</p> <p style="margin-left: 40px;">(U) Technical: Not applicable</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.</p> <p>(U) D. ACQUISITION STRATEGY: Not applicable.</p> <p>(U) E. SCHEDULE PROFILE: Not applicable</p>				FY2001	FY2002	FY2003	(U) FY 2002 President's Budget:	5.945	0.000	0.000	(U) Adjustments from the FY 2001 President's Budget:	-0.130	6.740	0.000	(U) FY 2003 President's Budget Submit:	5.815	6.740	0.000
	FY2001	FY2002	FY2003															
(U) FY 2002 President's Budget:	5.945	0.000	0.000															
(U) Adjustments from the FY 2001 President's Budget:	-0.130	6.740	0.000															
(U) FY 2003 President's Budget Submit:	5.815	6.740	0.000															

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			T2767 Virtual Systems Implementation Program						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support Equipment											0.000	
Software Development	CPFF	Concurrent Tech Corp PA	6.234	5.338	8/01	6.201	***				17.773	17.773
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			6.234	5.338		6.201		0.000		0.000	17.773	
Remarks: *** Based on release of funds by OSD												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			T2767 Virtual Systems Implementation Program						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	NAVSUP Mechanicsburg PA	0.542	0.477	09/01	0.539	***				1.558	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.542	0.477		0.539		0.000		0.000	1.558	
Remarks: *** Based on release of funds by OSD												
Total Cost			6.776	5.815		6.740		0.000		0.000	19.331	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 12 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2769 Compatible Processor Upgrade Program					
COST (\$ in Millions)	Prior Years Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost		3.872	3.392	2.454							9.718
RDT&E Articles Qty											
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The Compatible Processor Upgrade Program (CPUP) is a system-on-a-chip applications where specific standard processor products are used to modernize existing systems while preserving legacy software and infrastructure, adapt commercial designs for radiation environments and to optimize system designs for the best mix of performance, system size and weight, power usage and heat generation. These products are foundry technology independent and provide for long term availability. Funds are required by 1 Oct 2000. The program will be executed using a fixed price contract with CPU Technology, Inc., of Pleasanton, CA and the funds will be obligated by 30 Sep 2002. The impact of not receiving these funds as soon as possible after the fiscal year begins would be to increase support costs, adding to weapon system obsolescence and increased support problems. Response to the need for fleet upgrades of performance, function and reliability will be at great disadvantage to Navy operational readiness requirements.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS:</p> <p>-(U) (\$3.392) Efforts continued on the AYK/14 processors and CPUP efforts were expanded to improve system chip application to upgrade the UYK/14 and other mission critical electronics used in the E2C aircraft. We also applied CPUP products to other legacy systems such as the UYK-20 and UYK- 44 onboard computers.</p> <p>2. FY 2002 PLANS:</p> <p>-(U) (\$2.454) CPUP will preserve the investment in the Legacy software by inserting the latest compatible electronic technology into existing systems to increase their safety, reliability and performance while allowing that pre-existing software to function on state-of-the-art processors. Funding will be used for cost avoidance initiatives.</p> <p>3. FY 2003 PLANS: Not applicable.</p>											

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME T2769 Compatible Processor Upgrade Program																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;">FY2001</th><th style="text-align: center;">FY2002</th><th style="text-align: center;">FY2003</th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">3.467</td><td style="text-align: center;">0.000</td><td></td></tr><tr><td>(U) Adjustments from the FY 2001 President's Budget:</td><td style="text-align: center;">-0.075</td><td style="text-align: center;">2.454</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">3.392</td><td style="text-align: center;">2.454</td><td style="text-align: center;">0.000</td></tr></tbody></table> <p style="margin-top: 20px;">CHANGE SUMMARY EXPLANATION:</p> <p style="margin-left: 40px;">(U) Funding: FY 2001 decrease of \$.075 million reflects a Smallbusiness Innovative Research assessment. The FY 2002 increase is a Congressional Plus-Up.</p> <p style="margin-left: 40px;">(U) Schedule: Not applicable.</p> <p style="margin-left: 40px;">(U) Technical: Not applicable.</p> <p style="margin-top: 40px;">(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.</p> <p style="margin-top: 20px;">(U) D. ACQUISITION STRATEGY: Not applicable.</p> <p style="margin-top: 20px;">(U) E. SCHEDULE PROFILE: Not applicable.</p>				FY2001	FY2002	FY2003	(U) FY 2002 President's Budget:	3.467	0.000		(U) Adjustments from the FY 2001 President's Budget:	-0.075	2.454		(U) FY 2003 President's Budget Submit:	3.392	2.454	0.000
	FY2001	FY2002	FY2003															
(U) FY 2002 President's Budget:	3.467	0.000																
(U) Adjustments from the FY 2001 President's Budget:	-0.075	2.454																
(U) FY 2003 President's Budget Submit:	3.392	2.454	0.000															

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 14 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			T2769 Compatible Processor Upgrade Program						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support Equipment											0.000	
Software Development	FP	CPU Tech CA	3.562	3.116	08/01	2.258	***				8.936	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			3.562	3.116		2.258		0.000		0.000	8.936	
Remarks: *** Based on release of funds by OSD												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			T2769 Compatible Processor Upgrade Program						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	NAVSUP Mechanicsburg PA	0.310	0.276	09/01	0.196	***				0.782	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.310	0.276		0.196		0.000		0.000	0.782	
Remarks: *** Based on release of funds by OSD												
Total Cost			3.872	3.392		2.454		0.000		0.000	9.718	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4		0603739N Navy Logistic Productivity				T2920 Ordnance Management						
COST (\$ in Millions)		Prior Years Cost	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost					7.436	4.546	4.656	4.726	4.004	3.246		28.614
RDT&E Articles Qty												
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Naval Ammunition Logistics Center(NALC) 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 exponetially in the joint environment and the RDT&E initiatives listed herein are designed to ensure maximum Information Technology(IT) capability.												
(U) PROGRAM ACCOMPLISHMENTS AND PLANS: <												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 17 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME T2920 Ordnance Management																
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th style="text-align: center;">FY2001</th><th style="text-align: center;">FY2002</th><th style="text-align: center;">FY2003</th></tr></thead><tbody><tr><td>(U) FY 2002 President's Budget:</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td></td></tr><tr><td>(U) Adjustments from the FY 2001 President's Budget:</td><td style="text-align: center;">0.000</td><td style="text-align: center;">7.436</td><td></td></tr><tr><td>(U) FY 2003 President's Budget Submit:</td><td style="text-align: center;">0.000</td><td style="text-align: center;">7.436</td><td style="text-align: center;">4.546</td></tr></tbody></table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: (\$7.436) FY 2002 increase of \$7.436 million consists of a \$2.916 million transfer of funds from O&M,N and \$4.520 million from PBD 822 to provide upfront software and training developement along with configuration management support of the NALC's efforts to convert to the Ordnance Information System(OIS). The \$7.436 million will be used to convert the following systems under the OIS umbrella: Retail Ordnance Logistics Management System ROLMS), Receipts, Storage, Stowage, and Issue (RSS&I), Demil Program Support, Load Plan Support, Weapons Simulation, Ordnance Budget Planning, Ordnance Data Warehouse, Tomahawk Inventory System, Ordnance Asset Portfolio, and Conventional Ammunition Inventory Management System(CAIMS).</p> <p>(U) Schedule: Not applicable.</p> <p>(U) Technical: Not applicable.</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.</p>				FY2001	FY2002	FY2003	(U) FY 2002 President's Budget:	0.000	0.000		(U) Adjustments from the FY 2001 President's Budget:	0.000	7.436		(U) FY 2003 President's Budget Submit:	0.000	7.436	4.546
	FY2001	FY2002	FY2003															
(U) FY 2002 President's Budget:	0.000	0.000																
(U) Adjustments from the FY 2001 President's Budget:	0.000	7.436																
(U) FY 2003 President's Budget Submit:	0.000	7.436	4.546															

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 18 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME T2920 Ordnance Management		
(U) D. ACQUISITION STRATEGY: Not applicable.				
(U) E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones		OCT 01 OIS Software Development Oct 01 OIS Configuration Management Support	OCT 02 OIS Software Development Oct 02 OIS Configuration Management Support	
(U) Engineering Milestones		Jan 02 OIS Training Jan 02 OIS Documentation	Jan 03 OIS Training Jan 03 OIS Documentation	
(U) T&E Milestones				
(U) Contract Milestones				

R-1 SHOPPING LIST - Item No.

77

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity				T2920 Ordnance Management						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Primary Hardware Development											0.000		
Ancillary Hardware Development											0.000		
Systems Engineering											0.000		
Licenses											0.000		
Tooling											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													
Development Support Equipment											0.000		
Software Development	TBD	TBD				5.371	02/02	3.158	TBD		8.529		
Training Development	TBD	TBD				0.420	02/02				0.420		
Integrated Logistics Support											0.000		
Configuration Management	TBD	TBD				0.370	02/02	1.388	TBD		1.758		
Technical Data											0.000		
GFE											0.000		
Subtotal Support			0.000	0.000		6.161		4.546		0.000	10.707		
Remarks:													

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T2920 Ordnance Management						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation						0.750	02/02				0.750	
Operational Test & Evaluation						0.375	02/02				0.375	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		1.125		0.000		0.000	1.125	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WX	TBD				0.150	TBD				0.150	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.150		0.000		0.000	0.150	
Remarks:												
Total Cost			0.000	0.000		7.436		4.546		0.000	11.982	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 21 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE:			
								February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME					PROJECT NUMBER AND NAME					
RDT&E, N / BA 4	0603739N Navy Logistic Productivity					W2955 Joint Engineering Data Management Information & Control System (JEDMICS)					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost				4.261	3.577	3.577	3.564	3.559	3.653	Continuing	Continuing
RDT&E Articles Qty											

(U) 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 78,500,000 engineering images and has 32,000 authorized users responsible for over 70,000 user sessions per month. Over 2 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 29 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 it 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) evaluation and integration, and test and evaluation. JEDMICS development efforts are required to integrate and test COTS upgrades. These upgrades were previously procured with Operation and Maintenance, Navy funding. Funding has been moved to RDT&E,N to comply with 28 Oct 99 OSD Comptroller and 2 Nov 99 ASN(FMC) direction clarifying use of RDT&E funds.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 2001 ACCOMPLISHMENTS: Not Applicable

2. FY 2002 PLANS:

- (U) (\$3.250) Conduct development efforts associated with COTS obsolescence of the fully deployed COTS intensive JEDMICS system. Conduct COTS requirements definition, evaluation, integration and testing of baseline release. Continue technology insertion of the JEDMICS system that is required to protect the \$21B digital data asset managed in JEDMICS.
- (U) (\$.156) Conduct technical and configuration control reviews of JEDMICS system.
- (U) (\$.726) Conduct test and readiness reviews and functional performance tests on JEDMICS system.
- (U) (\$.129) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15USC 638.

3. FY 2003 PLANS:

- (U) (\$3.251) Conduct development efforts associated with COTS obsolescence of the fully deployed COTS intensive JEDMICS system. Conduct COTS requirements definition, evaluation, integration and testing of baseline release. Continue technology insertion of the JEDMICS system that is required to protect the \$21B digital data asset managed in JEDMICS.
- (U) (\$.326) Conduct test and readiness reviews and functional performance tests on JEDMICS system.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2002																																																																	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W2955 Joint Engineering Data Management Information & Control System (JEDMICS)																																																																		
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RDT&E,N PE 0603739N, JEDMICS Project No. W9047		4.857																																																																		
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R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 23 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	W2955 Joint Engineering Data Management Information & Control System (JEDMICS)		
(U) D. ACQUISITION STRATEGY: Contracting is via General Services Administration schedules with various vendors and are for software maintenance and COTS evaluation and integration. Performance base reviews are conducted quarterly by the PMO.				
(U)E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones			Dec02/Feb03 IOC Availability Baseline Release 3.3	Dec03/Feb04 IOC Availability Baseline Release 3.4
(U) Engineering Milestones		May 02/Aug 02 Tech Rev Board/ Config Control Board Baseline Release 3.3	May 03/Aug 03 Tech Rev Board/ Config Control Board Baseline Release 3.4	May 04/Aug 04 Tech Rev Board/ Config Control Board Baseline Release 3.5
(U) T&E Milestones		Aug 02/Nov 02 Test Readiness Rev/ Func Perf Test Baseline Release 3.3	Aug 03/Nov 03 Test Readiness Rev/ Func Perf Test Baseline Release 3.4	Aug 04/Nov 04 Test Readiness Rev/ Func Perf Test Baseline Release 3.5
(U) Contract Milestones		Dec 01/March 02 Contract Award Baseline Release 3.3 Upgrades Oracle Databases to supportable versions and supports integration to replace obsolete COTS	Dec 02/March 03 Contract Award Baseline Release 3.4 Upgrades Oracle Databases to supportable versions and supports integration to replace obsolete COTS	Dec 03/March 04 Contract Award Baseline Release 3.5 Upgrades Oracle Databases to supportable versions and supports integration to replace obsolete COTS

R-1 SHOPPING LIST - Item No.

77

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 24 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			W2955 Joint Engineering Data Management Information & Control System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Software Development	GSA/	Northrup Gruman Information Technology,				3.250	12/01	3.251	12/02	19.875	26.376	26.376
		(formerly Litton PRC)Reston, Va									0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.000	0.000		3.250		3.251		19.875	26.376	
Remarks: Funds are for development efforts associated with COTS obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Information & Control System (JEDMICS). Funds are for COTS evaluation, integration, and test and evaluation. The common baseline will be regained and obsolete COTS software and hardware will be replaced. Baseline releases will protect joint interoperability, upgrade operating systems for security patches and supportable versions, support integration to replace obsolete COTS, and upgrade the Oracle database to supportable versions.												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME W2955 Joint Engineering Data Management Information&Control System (JEDMICS)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CA/CPAF	TeamQualtec, Calif, Md				0.326	12/01	0.326	12/02	1.993	2.645	2.645
Award Fees	CA/CPAF											
Developmental Test & Evaluation	MIPR	AMCOM, Huntsville, Al				0.400	12/01				0.400	
Subtotal T&E			0.000	0.000		0.726		0.326		1.993	3.045	
Remarks:Supports testing of baseline releases in a user environment.												
Government Engineering Support	MIPR	CECOM, Ft. Monmouth, NJ				0.156	12/01				0.156	
SBIR Assessment						0.129					0.129	
Subtotal Management			0.000	0.000		0.285		0.000		0.000	0.285	
Remarks:Support configuration and requirements management at the Prime Contractor location.												
Total Cost			0.000	0.000		4.261		3.577		21.868	29.706	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

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

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE:				
								February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME						
RDT&E, N / BA 4		0603739N Navy Logistic Productivity				W9047 Joint Engineering Data Management Information & Control System Enhancements						
COST (\$ in Millions)		Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost					4.857							4.857
RDT&E Articles Qty												
<p>(U) 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 78,500,000 engineering images and has 32,000 authorized users responsible for over 70,000 user sessions per month. Over 2 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 29 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) evaluation, integration, test and evaluation. JEDMICS development efforts are required to integrate and test COTS upgrades.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS: Not applicable</p> <p>2. FY 2002 PLANS:</p> <p>(U) (\$4.857) To comply with Congressional direction for JEDMICS WEB Interface and Technical Data Management Enhancements.</p> <p>3. FY 2003 PLANS: Not applicable</p>												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 27 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W9047 Joint Engineering Data Management Information & Control System Enhancements

(U) B. PROGRAM CHANGE SUMMARY:

	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>
(U) FY 2002 President's Budget:	0	0	
(U) Adjustments from the President's Budget:	0	4.857	
(U) FY 2003 President's Budget Submit:	0	4.857	0

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY2002 net increase of \$4.857 million reflects a \$4.900 million congressional plus up and a decrease of \$.043 million for an undistributed congressional reduction.

(U) Schedule: Not applicable

(U) Technical: Not applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
OPN BLI 331100, JEDMICS	11.890	11.398					
O&M,N AG/SAG 4B3N, JEDMICS	1.470	1.435	1.592	1.583	1.562	1.587	1.672
RDT&E,N PE 0603739N, JEDMICS Project No. W2955		4.261	3.577	3.577	3.564	3.559	3.653
RDT&E,N PE 0603739N, JEDMICS Project No. W9048		1.685					
O&M,N AG/SAG 4B4N, JEDMICS	4.700						

R-1 SHOPPING LIST - Item No. 77

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 28 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																									
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W9047 Joint Engineering Data Management Information & Control System Enhancements																									
<p>(U) D. ACQUISITION STRATEGY: Contracting is via General Services Administration schedules and competitively awarded Indefinite Delivery type contracts with various vendors and are for software reengineering and COTS evaluation, testing, and integration. Performance base reviews are conducted quarterly by the PMO.</p> <p>(U)E. SCHEDULE PROFILE:</p> <table border="1"> <thead> <tr> <th></th> <th><u>FY 2001</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>TO COMPLETE</u></th> </tr> </thead> <tbody> <tr> <td>(U) Program Milestones</td> <td></td> <td></td> <td></td> <td>Jan-04 Initial Operating Capability (IOC) WEB JEDMICS</td> </tr> <tr> <td>(U) Engineering Milestones</td> <td></td> <td>Jul-02 Tech Review Board & Config. Control Board reviews conducted.</td> <td></td> <td></td> </tr> <tr> <td>(U) T&E Milestones</td> <td></td> <td></td> <td>Sep-03 Test Readiness review & Functional Perf. Tests</td> <td></td> </tr> <tr> <td>(U) Contract Milestones</td> <td></td> <td>May-02 Contract Award for JEDMICS WEB & Tech Data Mgt enhancements</td> <td></td> <td></td> </tr> </tbody> </table>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>	(U) Program Milestones				Jan-04 Initial Operating Capability (IOC) WEB JEDMICS	(U) Engineering Milestones		Jul-02 Tech Review Board & Config. Control Board reviews conducted.			(U) T&E Milestones			Sep-03 Test Readiness review & Functional Perf. Tests		(U) Contract Milestones		May-02 Contract Award for JEDMICS WEB & Tech Data Mgt enhancements		
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>																							
(U) Program Milestones				Jan-04 Initial Operating Capability (IOC) WEB JEDMICS																							
(U) Engineering Milestones		Jul-02 Tech Review Board & Config. Control Board reviews conducted.																									
(U) T&E Milestones			Sep-03 Test Readiness review & Functional Perf. Tests																								
(U) Contract Milestones		May-02 Contract Award for JEDMICS WEB & Tech Data Mgt enhancements																									

R-1 SHOPPING LIST - Item No.

77

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			W9047 Joint Engineering Data Management Information & Control System Enhancements						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development												
Remarks:												
OAI Development & Test and	GSA/	Northrup Gruman Information Technology,										
WEB SW and Improvement		(formerly Litton PRC)Reston, Va				2.707	05/02				2.707	
Integrated Data Environment (IDE)	IDIQ	Lockheed Martin Systems Int.				1.900	05/02				1.900	
Subtotal Support						4.607		0.000			4.607	
Remarks: Funds are for specific development efforts associated with the JEDMICS Open Application Interface (OAI) version 3.0 and its integration into JEDMICS software baseline release 3.4. Additional efforts require the re-engineering & testing of existing USER tools such as the JEDMICS PC Application to function in an OAI environment. Additional engineering efforts are required to include the evaluation of engineering data acquired by the various Acquisition Programs to develop a Technical Prototype alternative solution to incorporate the various Tech Data Formats in an Integrated Data Environment (IDE).												

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			W9047 Joint Engineering Data Management Information&Control System Enhancements						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation and Independent Verification & Validation	CA/CPAF	TeamQualtec, Calif, Md				0.100	05/02				0.100	
Developmental Test & Evaluation	MIPR	AMCOM, Huntsville, Al				0.150	05/02				0.150	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.250		0.000			0.250	
Remarks: Supports testing of WEB JEDMICS applications and Tech Data Management enhancements in a user environment.												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	0.000		4.857		0.000		0.000	4.857	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME					
RDT&E, N / BA 4		0603739N Navy Logistic Productivity				W9048 Joint Engineering Data Management Information & Control System (JEDMICS) Secu					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost				1.685							1.685
RDT&E Articles Qty											
<p>(U) 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 78,500,000 engineering images and has 32,000 authorized users responsible for over 70,000 user sessions per month. Over 2 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 29 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) evaluation and integration, and test and evaluation. JEDMICS development efforts are required to integrate and test COTS upgrades. These upgrades were previously procured with Operation and Maintenance, Navy funding.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS: Not applicable.</p> <p>2. FY 2002 PLANS: (U) (\$1.685) To comply with Congressional direction for the continued Integration and test of JEDMICS / Cryptek Secure Communications Multi-level security solution in FY's 2000 & 2001 while extending it to other Logistics processes.</p> <p>3. FY 2003 PLANS: Not applicable.</p>											

R-1 SHOPPING LIST - Item No. 77

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME PE0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W9048 Joint Engineering Data Management Information & Control System (JEDMICS) Sec

(U) B. PROGRAM CHANGE SUMMARY:

	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>
(U) FY 2002 President's Budget:	0.000	0.000	
(U) Adjustments from the President's Budget:	0.000	1.685	
(U) FY 2003 President's Budget Submit:	0.000	1.685	0.000

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY2002 net increase of \$1.685 million reflects a \$1.700 million congressional plus up and a decrease of \$.015 million for an undistributed congressional reduction.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
OPN BLI 331100, JEDMICS	11.890	11.398					
O&M,N AG/SAG 4B3N, JEDMICS	1.470	1.435	1.592	1.583	1.562	1.587	1.672
RDT&E,N PE 0603739N, JEDMICS Project No. W2955		4.261	3.577	3.577	3.564	3.559	3.653
RDT&E,N PE 0603739N, JEDMICS Project No. W9047		4.857					
O&M,N AG/SAG 4B4N, JEDMICS	4.700						

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 33 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	W9048 Joint Engineering Data Management Information & Control System (JEDMICS) Security		
(U) D. ACQUISITION STRATEGY: Contracting is via General Services Administration schedules with various vendors and are for software maintenance and COTS evaluation and integration. Performance base reviews are conducted quarterly by the PMO.				
(U)E. SCHEDULE PROFILE:				
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>
(U) Program Milestones				Jan-04 Initial Operating Capability (IOC) WEB JEDMICS
(U) Engineering Milestones		Jul-02 Tech Review Board & Config. Control Board reviews conducted.		
(U) T&E Milestones			Sep-03 Test Readiness review & Functional Perf. Tests	
(U) Contract Milestones		May-02 Contract Award for JEDMICS WEB & Tech Data Mgt enhancements		

R-1 SHOPPING LIST - Item No.

77

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4				PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME W9048 Joint Engineering Data Management Information & Control System (JEDMICS) Security					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Develop, Test, & Integration	SS/FFP/	Cryptek Secure Communications				1.285					1.285	1.285
	Cost										0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.000	0.000		1.285		0.000			1.285	
Remarks: Funds are for continued development efforts associated with the evaluation, testing, and integration of Cryptek multi-level security products into other Logistics Information Technology (IT) Systems and process environments.												

R-1 SHOPPING LIST - Item No. 77

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Exhibit R-2, RDTEEN Budget Item Justification
(Exhibit R-2, page 36 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603739N Navy Logistic Productivity			W9048 Joint Engineering Data Management Information&Control System (JEDMICS) Security						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation an	CA/CPAF	TeamQualtec, Calif, Md				0.300	05/02				0.300	0.300
Independent Verification/Validation												
Developmental Test & Evaluation an	MIPR	AMCOM, Huntsville, Al				0.100	05/02				0.100	
DITSCAP evaluation.												
Subtotal T&E			0.000	0.000		0.400		0.000			0.400	
Remarks: Supports the continued testing and DITSCAP evaluation of multi-level security products in an Integrated Data Environment (IDE).												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	0.000		1.685		0.000		0.000	1.685	
Remarks:												

R-1 SHOPPING LIST - Item No. 77

UNCLASSIFIED

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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002																											
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA 4				R-1 ITEM NOMENCLATURE Ship Self Defense/0603755N																													
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost																								
Total PE Cost	6.232	9.270	5.930	5.420	5.684	4.886	4.095	CONT.	CONT.																								
QRCC/RAWG 22133	0.000	2.161	2.054	2.369	2.473	2.366	2.567	CONT.	CONT.																								
Force AAW Coord. Tech. (FACT)/ K2184/(K9050)*	6.232	7.109	3.876	3.051	3.211	2.520	1.528	CONT.	CONT.																								
Quantity of RDT&E Articles																																	
<p>A. (U) Mission Description and Budget Item Justification: This program incorporates efforts dedicated to the enhancement of ship self defense against Anti-Air Warfare (AAW) threats. Its primary focus is on the development of technologies, systems, and procedures necessary to defeat the evolving Anti-Ship Cruise Missile (ASCM) threat. 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 K2133, 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. Beginning in FY02, 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 K2184, demonstrates Force Anti-Air Warfare (AAW) concepts and capabilities which will enhance the AAW war-fighting ability of ships and aircraft and enable the coupling of the Force into a single, distributed AAW weapon svstem through more effective use of tactical data. and force sensors and weapons.</p> <p>B. (U) Program Change Summary</p> <table border="0"> <thead> <tr> <th></th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> </tr> </thead> <tbody> <tr> <td>FY 2002 President's Budget Submit:</td> <td>6.610</td> <td>8.353</td> <td></td> </tr> <tr> <td>Appropriated Value</td> <td>6.564</td> <td>9.353</td> <td></td> </tr> <tr> <td>Adjustments to FY2001/2002</td> <td>-0.332</td> <td>-0.083</td> <td></td> </tr> <tr> <td>Appropriated Value/FY2002 President's Bidget:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 2003 Pres Budget Submit</td> <td>6.232</td> <td>9.270</td> <td>5.930</td> </tr> </tbody> </table> <p>Funding: FY01: FY01 changes are a result of Small Business Innovative Research (SBIR) reduction (-\$0.173), and minor pricing adjustments (-\$0.159). FY02: FY02 changes are a result of a Congressional Plus Up (\$1.0) and minor pricing adjustments (\$.083) * Includes Congressional Plus Up</p>											FY 2001	FY 2002	FY 2003	FY 2002 President's Budget Submit:	6.610	8.353		Appropriated Value	6.564	9.353		Adjustments to FY2001/2002	-0.332	-0.083		Appropriated Value/FY2002 President's Bidget:				FY 2003 Pres Budget Submit	6.232	9.270	5.930
	FY 2001	FY 2002	FY 2003																														
FY 2002 President's Budget Submit:	6.610	8.353																															
Appropriated Value	6.564	9.353																															
Adjustments to FY2001/2002	-0.332	-0.083																															
Appropriated Value/FY2002 President's Bidget:																																	
FY 2003 Pres Budget Submit	6.232	9.270	5.930																														

R-1 SHOPPING LIST - Item No. 81-1 of 81-9

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 1 of 9)

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4		PROGRAM ELEMENT NAME AND NUMBER SHIP SELF DEFENSE 0603755N		PROJECT NAME AND NUMBER Force AAW Coordination Technology K2184/K9050					
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	6.232	7.109	3.876	3.051	3.211	2.520	1.528	CONT.	CONT.
RDT&E Articles Qty									

A. (U) Mission Description and Budget Item Justification: Force Anti-Air Warfare Coordination 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, distributed AAW 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 AAW operations. 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 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 Line (DNMFL); Force Threat Evaluation Weapons Assignment (FTEWA); and the prototype Area Air Defense Commander (AADC) capability. Short and long term objectives will be phased in to produce higher degrees of ship defense and battle coordination and effectiveness.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY01 ACCOMPLISHMENTS:

- (U) (\$0.704) Supported landbased and at-sea experiments of advanced Command and control systems, and conduct analysis to evaluate air defense concepts to evaluate capabilities, including multi-Tactical Data Information Link (TADIL) operations, and air defense operations.

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4	PROGRAM ELEMENT NAME AND NUMBER SHIP SELF DEFENSE 0603755N	PROJECT NAME AND NUMBER Force AAW Coordination Technology/K2184/K0950

FY01 ACCOMPLISHMENTS Continued:

- (U) (\$0.329) Provided top-level programmatic support, technical analysis, and assist in the development of processes, procedures, and documentation that impact the execution of the FACT program requirements.
- (U) (\$0.889) Developed concepts and capabilities to support the integration of Multi-TADIL and cooperative engagement networks across Joint Air defense systems, improve Navy and Joint Link interoperability.
- (U) (\$4.310) Developed concepts and define requirements for detection, control and engagement of time sensitive targets beyond the Fire Support Coordination Line (FSCL).

U) FY02 PLAN:

- (U) (\$5.146) Development of the Joint Targeting, Attack and Assessment capability (JTAAC). Test the basic JTAAC prototype at Johns Hopkins University/Applied Physics Lab (JHU/APL) and refine it as necessary.
- (U) (\$0.822) Support land based and at-sea experiments of advanced Command and Control systems, and conduct analysis to evaluate air defense concepts and capabilities, including multi-TADIL operations and air defense operations.
- (U) (\$0.150) Provide top-level programmatic support, technical analysis, and assist in the development of processes, procedures, and documentation that impact the execution for the FACT program requirements.
- (U) (\$0.991) Transportable Anti-Intrusion Pontoon Barrier Systems

(U) FY03 PLAN:

- (U) (\$2.893) Demonstrate the JTAAC at sea aboard the 3rd FLT flagship and ashore at JHU/APL. Use feedback to develop advanced JTAAC concepts and refine JTAAC requirements.
- (U) (\$0.833) Support land based and at-sea experiments of advanced Command and Control systems, and conduct analysis to evaluate air defense concepts and capabilities, including multi-TADIL operations and air defense operations.
- (U) (\$0.150) Provide top-level programmatic support, technical analysis, and assist in the development of processes, procedures, and documentation that impact the execution for the FACT program requirements.

R-1 SHOPPING LIST - Item No. 81-3 of 81-9

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 3 of 9)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4	PROGRAM ELEMENT NAME AND NUMBER SHIP SELF DEFENSE 0603755N	PROJECT NAME AND NUMBER Force AAW Coordination Technology K2184/K9050
<p>B. Other Program Funding Summary: Not Applicable</p> <p>C. Acquisition Strategy: Not Applicable</p> <p>D. Schedule Profile: Not Applicable</p>		

R-1 SHOPPING LIST - Item No. 81-4 of 81-9

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 4 of 9)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA4			SHIP SELF DEFENSE 0603755N			Force AAW Coordination Technology K2184/K9050						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/LAUREL, MD	64.769	5.199	11/1/100	5.146	11/01	3.726	11/02	CONT.	CONT	
Systems Engineering		SPAWAR, S.D.	0.150							0.000	0.150	
Systems Engineering		SPAWAR, NORFOLK	0.417							0.000	0.417	
Systems Engineering		PUGET SOUND BOSTON	0.029							0.000	0.029	
Anti-Intrusion Barrier		UNKNOWN	0.000	0.000	N/A	0.991	UNKNOWN	0.000		0.000	0.991	
GFE												
Award Fees												
Subtotal Product Development			65.365	5.199		6.137		3.726		CONT.	CONT	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support		NSWC/PHD	0.175							0.000	0.175	
Integrated Logistics Support		NSLC MECH. PA	0.005							0.000	0.005	
Integrated Logistics Support	GSA	AMERIND	0.111							0.000	0.111	
Configuration Management												
Technical Data		NSWC/DD, DAHLGREN, VA	0.150							0.000	0.150	
GFE												
Subtotal Support			0.441	0.000		0.000		0.000		0.000	0.441	
Remarks:												

R-1 SHOPPING LIST - Item No. 81-5 of 81-9

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 5 of 9)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N BA4				PROGRAM ELEMENT SHIP SELF DEFENSE 0603755N			PROJECT NAME AND NUMBER Force AAW Coordination Technology K2184/K9050					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation	CPFF	APL/LAUREL, MD		0.704	11/00	0.822	11/01			CONT.	CONT.	
Tooling												
GFE												
Subtotal T&E			0.000	0.704		0.822		0.000		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	CPAF	RGE, SPRINGFIELD, VA	0.006							0.000	0.006	
Contractor Engineering Support	CPFF	SPA, FAIRFAX, VA	0.100							0.000	0.100	
Contractor Engineering Support	CPFF	LOGICON,FALLS CHUR, VA	0.060							0.000	0.060	
Contractor Engineering Support	GSA	STRATEGIC INSIGHT, VA		0.189								
Program Management Support	GSA	DSR, FAIRFAX, VA	0.150	0.140	03/01	0.150	11/01	0.150		CONT.	CONT.	
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.316	0.329		0.150		0.150		CONT.	CONT.	
Remarks:												
Total Cost			66.122	6.232		7.109		3.876		CONT.	CONT.	CONT.
Remarks:												

R-1 SHOPPING LIST - Item No. 81-6 of 81-9

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 9)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY		SHIP SELF DEFENSE 0603755N			PROJECT NAME AND NUMBER				
RDT&E, N BA4					Quick Reaction Combat Capability/Requirements and Analysis Working Group/22133				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	0.000	2.161	2.054	2.369	2.473	2.366	2.567	CONT.	CONT.
RDT&E Articles Qty									
<p>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.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS: Not Applicable</p> <p>2. (U) FY 2002 PLAN: (U) 2.161) The RAWG will provide independent analysis for a variety of combat system trade-offs, ship class performance studies, and force protection strategic plan development.</p> <p>3. (U) FY 2003 PLAN: (U) (2.054) The RAWG will provide independent analysis for a variety of combat system trade-offs, ship class performance studies, and force protection strategic plan development.</p> <p>B. Other Program Funding Summary: Not Applicable</p> <p>C. Acquisition Strategy: Not Applicable</p> <p>D. Schedule Profile: Not Applicable</p>									

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA4			SHIP SELF DEFENSE 0603755N			Quick Reaction Combat Capability/Requirements and Analysis Working Group/22133						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Systems Engineering	Various	Various	4.955							0.000	4.955	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			4.955	0.000		0.000		0.000		0.000	4.955	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 81-8 of 81-9

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 9)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N BA4			SHIP SELF DEFENSE 0603755N			Quick Reaction Combat Capability/Requirements and Analysis Working Group/22133						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		Various	7.629	0.000		2.161		2.054		CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			7.629	0.000		2.161		2.054		CONT.	CONT.	
Remarks: FY 02 is the first year for Requirements and Analysis Working Group (RAWG) Program.												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support				0.000		0.000				CONT.	CONT.	
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.000	0.000		0.000		0.000		CONT.	CONT.	
Remarks:												
Total Cost			12.584	0.000		2.161		2.054		CONT.	CONT.	CONT.
Remarks:												

R-1 SHOPPING LIST - Item No. 81-9 of 81-9

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

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2293	NATO Cooperative Research and Development (R&D)								
	8,620	11,449	11,581	11,804	12,276	12,512	12,760	CONT.	CONT.

A. (U) 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 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) which also states why the project serves to increase the conventional defense capabilities of the U.S.

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$3,398) Supported work on the Vector Project between the U.S. and Germany.
- (U) (\$ 204) Supported Fiber Optic Bottom Mounted Acoustic Array between the U.S. and United Kingdom.
- (U) (\$ 374) Supported efforts on the Multilateral Memorandum of Understanding (MOU) for Interoperable Network for Secure Communications.
- (U) (\$ 566) Supported efforts on the Multilateral MOU for Standard Missile Family.
- (U) (\$ 622) Supported work on the Multilateral Torpedo Tripwire Defense System.

R-1 Line Item 84

Budget Item Justification
(Exhibit R-2, page 1 of 6)

UNCLASSIFIED

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FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

- (U) (\$1,020) Supported work on the Unmanned Undersea Vehicle (UUV) for Mine Countermeasure Project with the United Kingdom.
- (U) (\$ 114) Supported Improved Submarine Launched Mobile Mine with Australia.
- (U) (\$ 453) Supported the Software Radio Project with Japan.
- (U) (\$ 339) Supported on-going work related to the Cooperative R&D Project between the U.S. and the United Kingdom for Trimaran Hull.
- (U) (\$ 397) Supported the Harpoon Enhancement Evaluation with Israel.
- (U) (\$1,133) Supported the Multilateral LW-155MM Howitzer Program.

2. (U) FY 2002 PLAN:

- (U)(\$11,449) 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 summarized in separate SSOIs. International agreements in areas such as military communications, software development, modeling, weapons development, and ship systems are some of the projects under consideration.

3. (U) FY 2003 PLAN:

- (U)(\$11,581) 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 summarized in separate SSOIs.

B. (U) PROGRAM CHANGE SUMMARY:

R-1 Line Item 84

Budget Item Justification
(Exhibit R-2, page 2 of 6)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
(U) FY 2002 President's Budget:	8,909	11,551	
(U) Adjustments from PRESBUDG:			
(U) SBIR Adjustment	-112		
(U) 2001 Execution Adjustments	-177		
(U) Section 8123 - Management Reform Initiative Reduction		-102	
(U) FY 2003 President's Budget Submission:	8,620	11,449	11,581

(U) CHANGE SUMMARY EXPLANATION:

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

(U) PE 0605853N (Management, Technical and International Support)

(U) PE 0605130D (Foreign Comparative Testing)

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item 84

Budget Item Justification
(Exhibit R-2, page 3 of 6)

UNCLASSIFIED

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FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
a. Cooperative Research and Development	8,620	11,449	11,581

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION:

PERFORMING ORGANIZATIONS

Contractor/ Government Performing <u>Activity</u>	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	<u>FY 2001</u> <u>Budget</u>	<u>FY 2002</u> <u>Budget</u>	<u>FY 2003</u> <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
Product Development									
NAVSEA	PD				600	3,300	2,500	CONT.	CONT.
NSWC-CD	WX				0	700	900	CONT.	CONT.
NUWC	WX				900	450	450	CONT.	CONT.
Miscellaneous					3,190	5,299	6,231	CONT.	CONT.
NAVAIR	PD				3,000	-	-	-	-

R-1 Line Item 84

RDT&E PE/Project Cost Breakdown
(Exhibit R-3, page 4 of 6)

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FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

Contractor/ Government Performing <u>Activity</u> Support and Management	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	FY 2001 <u>Budget</u>	FY 2002 <u>Budget</u>	FY 2003 <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>
NRL	WX				530	-	-	-	-
SPAWAR	PD				400	1,700	1,500	-	-

Contractor/ Government Performing <u>Activity</u> Test and Evaluation	Contract Method/ Fund Type <u>Vehicle</u>	Award/ Oblig <u>Date</u>	Perform Activity <u>EAC</u>	Project Office <u>EAC</u>	FY 2001 <u>Budget</u>	FY 2002 <u>Budget</u>	FY 2003 <u>Budget</u>	To <u>Complete</u>	Total <u>Program</u>

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 2001	FY 2002	FY 2003	To	Total
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R-1 Line Item 84

RDT&E PE/Project Cost Breakdown
(Exhibit R-3, page 5 of 6)

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FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603790N

PROJECT NUMBER: R2293

PROGRAM ELEMENT TITLE: NATO Research and Development

PROJECT TITLE: NATO Cooperative R&D

	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development	7,690	9,749	10,081	CONT.	CONT.
Subtotal Support and Management	930	1,700	1,500	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0
Total Project	8,620	11,449	11,581	CONT.	CONT.

R-1 Line Item 84

RDT&E PE/Project Cost Breakdown
(Exhibit R-3, page 6 of 6)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification					DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE						
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4			Land Attack Technology/0603795N						
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	140.357	149.063	108.693	85.632	76.362	70.438	67.162	CONT	CONT
Naval Surface Fire Support (NSFS)/32156*	57.438	42.302	44.766	21.917	8.120	7.189	7.935	CONT	CONT
Advance Medium Caliber Gun Demonstrator (AMCGD)/39051*	0.000	2.577	0.000	0.000	0.000	0.000	0.000	CONT	CONT
Autonomous Naval Support Round (ANSR)/39052**	0.000	10.110	0.000	0.000	0.000	0.000	0.000	CONT	CONT
Advanced Land Attack Missile (ALAM)/32324	3.838	0.000	0.000	0.000	0.000	0.000	0.000	CONT	CONT
Naval Fires Control System (NFCS)/32325	47.080	48.403	29.163	28.863	18.606	13.699	9.755	CONT	CONT
Land Attack Standard Missile (LASM)/K2409	21.086	9.399	0.000	0.000	0.000	0.000	0.000	0.000	86.363
Naval Fires Network (NFN)/32927/32871 **	10.915	34.191	34.764	34.852	49.636	49.550	49.472	CONT	CONT
Integrated Deepwater System (IDS)/39053**	0.000	2.081	0.000	0.000	0.000	0.000	0.000	CONT	CONT
Emergency Response Fund		73.46***							
Quantity of RDT&E Articles & Cost (see attached projects)									
* Funding includes the following FY01 Adds: ERGM/BAA Project 32156 - \$6.951M; NFN Project 32927 - \$.993M, BTR - \$9.922M									
** Funding includes the following FY02 Adds: NFN Project 32871 - \$29.239M; AMCGD Project 39051 - \$2.577; ANSR Project 39052 - \$10.110M; IDS Project 39053 - \$2.081M									
***ERF,D Funding \$73.460 supports full systems scheduled to be installed aboard USS BLUE RIDGE, USS LA SALLE, USS LINCOLN.									
A. (U) Mission Description and Budget Item Justification: The Land Attack Technology program element supports the Naval Surface Fire Support (NSFS) mission. In order to meet the United States Marine Corp (USMC) requirements for NSFS in support of Operational Maneuvers from the Sea (OMFTS), the Navy is developing a variety of weapons systems including both gun and missile systems that can provide the required range, lethality, accuracy, and responsiveness. The NSFS program (Project 32156/32624) develops gun systems including the 5"/62 gun (a modification of the existing 5"/54 gun); a 5" Extended Range Guided Munition (ERGM) with a coupled internal Global Positioning System (GPS) and Inertial Navigation System (INS) capable of delivering a submunition payload to a range in excess of current capability; and associated propelling charge improvements. The Autonomous Naval Support Round (ANSR) (Project 39052) is a rolling airframe platform to be used to demonstrate/advance gun-launched guided projectile technologies. The Advanced Medium Caliber Gun System (AMCGS) (Project 39051) is a Phase III SBIR designed to demonstrate an advanced gun design encompassing modularity, scalability, compactness, and long range. The Naval Fires Network (NFN) (Project 32927) is a system which will automate, coordinate, and correlate, in a real time fashion, the processing of multiple tactical data streams from various surveillance/intelligence sources to provide time-critical fire control solutions for advanced weapon systems and sensors. The automation/correlation provided by NFN will provide the Navy an ability to quickly target and re-target precision weapons, greatly enhancing their effectiveness and lethality. In order to satisfy USMC requirements for longer range, responsive fire support, the Navy is developing the Land Attack Standard Missile (LASM) (Project K2409), a variant of the proven Standard Missile. In addition, the Advanced Land Attack Missile (ALAM) (Project 32324) was being developed to expand the interim LASM capability using updated technology to fully meet extended range requirements and service the land attack target set as derived from the OMFTS strategy. The ALAM AoA was completed, recommending boost guide candidates and additional follow-on detailed design studies. The Navy intends to pursue competition for ALAM pending Navy and OSD leadership acquisition decisions. The Naval Fires Control System (NFCS) (Project 32325) develops systems that will support mission planning for 5"/62 – ERGM and Land Attack Missiles. It will automate shipboard land attack battle management duties to be interoperable and consistent with joint C4ISR systems. These shipboard weapon systems will significantly improve the Navy's ability to support OMFTS. The Land Attack Technology program element also includes the transition of Advance Technology Demonstrations (ATDs) and Pre-Planned Product Improvements (P3Is) into the NSFS program. The Integrated Deepwater System (Project 39053) supports USN evaluation of Intermediate Caliber Gun Systems and associated munitions for Anti-Surface Warfare mission area capability in USN Surface Combatants and USCG Cutters.									

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE: February 2002																												
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE																													
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4	Land Attack Technology/0603795N																													
<p>B. (U) Program Change Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: center;"><u>FY 2001</u></th> <th style="width: 15%; text-align: center;"><u>FY 2002</u></th> <th style="width: 30%; text-align: center;"><u>FY 2003</u></th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td style="text-align: right;">138.956</td> <td style="text-align: right;">130.993</td> <td></td> </tr> <tr> <td>(U) Appropriated Value:</td> <td style="text-align: right;">140.244</td> <td style="text-align: right;">150.393</td> <td></td> </tr> <tr> <td>(U) Adjustments to FY2001/2002</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Appropriated Value/FY 2002</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">President's Budget</td> <td style="text-align: right;">0.113</td> <td style="text-align: right;">-1.330</td> <td></td> </tr> <tr> <td>(U) FY 2003 Pres Budget Submit:</td> <td style="text-align: right;">140.357</td> <td style="text-align: right;">149.063</td> <td style="text-align: right;">108.693</td> </tr> </tbody> </table> <p>Funding:</p> <p>FY 2001: Adjustments due to: LASM BTR (+\$.113K)</p> <p>FY 2002: Adjustments due to: Issue 67825 Section 8123 Management Reform Initiative (-\$1.330K)</p> <p>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, the Extended Range Guided Munition, the Mk 160 Fire Control upgrades, the Propelling Charge upgrade and the Naval Fires Control System that together provide a significant enhancement to Naval Surface Fire Support. Technical challenges and the decision of the prime contractor to close its developmental plant in Lewisville, TX and move ERGM related development activities to Tucson, AZ caused delays in the ERGM program and subsequently impacting the other programs and the NSFS capability. The Government recently restructured the ERGM contract with RMS and signed a contract modification on 11 Dec 2000. The contract was restructured to moved the IOC from FY04 to FY05 to make the program more affordable. This change stretched out all ERGM development activity including CDR, Opeval Round Procurement, LRIP, Techeval, Opeval and MSIII. Following the restructured contract modification, RMS recently successfully completed its first flight demonstration of the ERGM on schedule which bodes well for meeting the restructured contract schedule and supporting an FY05 IOC.</p> <p>Technical: N/A</p>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	(U) FY 2002 President's Budget:	138.956	130.993		(U) Appropriated Value:	140.244	150.393		(U) Adjustments to FY2001/2002				Appropriated Value/FY 2002				President's Budget	0.113	-1.330		(U) FY 2003 Pres Budget Submit:	140.357	149.063	108.693
	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>																											
(U) FY 2002 President's Budget:	138.956	130.993																												
(U) Appropriated Value:	140.244	150.393																												
(U) Adjustments to FY2001/2002																														
Appropriated Value/FY 2002																														
President's Budget	0.113	-1.330																												
(U) FY 2003 Pres Budget Submit:	140.357	149.063	108.693																											

R-1 SHOPPING LIST - Item No. 85 - 2 of 85 -31

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 2 of 31)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Surface Fire Support/32156/32624/39051/39052				
COST (\$ in Millions)	FY 2001*	FY 2002**	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	57.438	54.989	44.766	21.917	8.120	7.189	7.935	CONT	CONT
RDT&E Articles Qty			80						
<p>*Funding includes FY 2001 ERGM Congressional Add \$6.951M</p> <p>**Funding includes FY 2002 Congressional Adds for NSFS: ANSR Project 39052 - \$10.110M; AMCGD Project 39051 - \$2.577M</p> <p>A. (U) Mission Description and Budget Item Justification: These funds provide for the development of the 5"/62 Extended Range Guided Munition (ERGM) weapons system which consists of a: 5" MK 45 gun modification which strengthens the gun to accommodate higher firing loads (18 megajoules) to fire the EX 171 Extended Range Guided Munition (ERGM); ERGM, a 5" munition with an internal Global Positioning System receiver coupled with an inertial Navigation System capable of delivering a submunitions to ranges in excess of 41NM; a gun fire control system which updates the MK 160 MOD 7 to a MOD 8 providing direct digital interface with the gun as well as the ERGM; and an upgraded propelling charge to provide the higher gun firing energy required by ERGM. This project also includes the demonstration and the advancement of gun-launched guided projectile technologies, the demonstration and advancement of long-range modular scalable gun designs, and the transition of ATDs and Pre-Planned Product Improvements (P³Is) into the NSFS envelope.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> - (U) (\$37.801) Began transition from design to validation and test of ERGM design. Conducted program maneuver flights of EDM ERGMs. - (U) (\$ 7.936) ERGM Broad Agency Announcement. - (U) (\$ 1.427) Began transition from development to validation of EX-167 Propelling Charge. - (U) (\$ 9.087) Continue development and testing of 5" MK 45 modification and GFP preparation. - (U) (\$ 1.187) Continue development and testing of the Gun Fire Control Modification and required interfaces. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$33.308) Continue development of EX-171 EDMs for ERGM. Continue rocket motor testing and component integration. - (U) (\$ 1.212) Continue development of EX-167 Propelling Charge. - (U) (\$ 6.836) Continue development and testing of 5" MK 45 modification and GFM preparation. Continue test firing of the modification. 									

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																																								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N	PROJECT NAME AND NUMBER Naval Surface Fire Support/32156/32624/39051/39052																																								
<p>2. (U) FY 2002 PLAN (Cont):</p> <ul style="list-style-type: none"> - (U) (\$.946) Continue development and testing of the Gun Fire Control Modification and required interfaces. - (U) (\$10.110) Begin demonstration of a low-cost guidance electronic unit in a rolling airframe. - (U) (\$ 2.577) Begin demonstration of an advanced modular, scalable, compact, long-range gun design. <p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$28.685) Continue development of EX-171 EDMs for ERGM. Continue rocket motor testing and component integration. - (U) (\$ 7.500) ERGM LRIP Buy - (U) (\$ 1.028) Continue development of EX-167 Propelling Charge. - (U) (\$ 7.076) Continue development and testing of 5" MK 45 modification and GFM preparation. Continue test firing of the modification. - (U) (\$.477) Continue development and testing of the Gun Fire Control Modification and required interfaces. <p>B. (U) Other Program Funding Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th><u>FY2001</u></th> <th><u>FY2002</u></th> <th><u>FY2003</u></th> <th><u>FY2004</u></th> <th><u>FY2005</u></th> <th><u>FY2006</u></th> <th><u>FY2007</u></th> <th><u>Complete</u></th> <th><u>Cost</u></th> </tr> </thead> <tbody> <tr> <td>PAN,MC BL, 025300</td> <td>5.669</td> <td>5.105</td> <td>4.022</td> <td>16.210</td> <td>58.203</td> <td>105.720</td> <td>102.683</td> <td></td> <td></td> </tr> <tr> <td>WPN BLI:4217, E5004</td> <td>25.000</td> <td>21.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td></td> <td></td> </tr> <tr> <td>SCN BLI 212200</td> <td>36.241</td> <td>24.868</td> <td>25.507</td> <td>25.507</td> <td>12.753</td> <td>TBD</td> <td>TBD</td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) Related RDT&E,N: N/A</p> <p>C. (U) Acquisition Strategy: A competition was held in FY 96 for the ERGM. It resulted in an award to Texas Instruments (now Raytheon Missile Systems) with a corporate investment of \$55M for development cost. The gun is being developed under a sole source arrangement with United Defense, the current 5"/54 MK 45 MOD 2 producer. The Fire Control (MK 160) and the propelling charge are being developed by the Naval Surface Warfare Center, Indian Head since these system changes are modifications to current government owned/supplied equipment. The Technology demonstration/advancement via ANSR contract award is TBD. The AMCGS demonstration will be awarded to TBD.</p>				<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>Complete</u>	<u>Cost</u>	PAN,MC BL, 025300	5.669	5.105	4.022	16.210	58.203	105.720	102.683			WPN BLI:4217, E5004	25.000	21.000	0.000	0.000	0.000	0.000	0.000			SCN BLI 212200	36.241	24.868	25.507	25.507	12.753	TBD	TBD		
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>Complete</u>	<u>Cost</u>																																	
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R-1 SHOPPING LIST - Item No. 85 - 5 of 85 - 31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 5 of 31)

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CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Land Attack Technology/0603795N			Naval Surface Fire Support/32156/32624/39051/39052						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target of Contract
Privitization	CPIF/FF	UDLP, Minneapolis, MN	3.908									
Primary Hardware Development	CPIF/FF	UDLP, Minneapolis, MN	50.324	5.219	11/00	2.700	11/01	3.400	11/02	CONT	CONT	57.424
	CPAF/IF	Raytheon, Tucson, AZ	88.148	26.621	11/00	19.815	11/01	9.648	11/02	CONT	CONT	146.800
	WR	NSWC Dahlgren, VA	56.867							CONT	CONT	N/A
	WR	NSWC Indian Head, MD	15.088							CONT	CONT	N/A
	WR	NSWC Port Hue., CA	25.386							CONT	CONT	N/A
LRIP	CPAF/IF	Raytheon, Tucson, AZ	0.000	0.000	N/A	0.000	N/A	7.500	11/02	CONT	CONT	7.500
ERGM BAA	CPFF	Draper, Cambridge, MA	3.596	4.654	11/00	0.000	11/01	0.000	N/A	CONT	CONT	9.950
	WR	NSWC	0.365	2.250	11/00	0.000	11/01	0.000	N/A	CONT	CONT	N/A
	VAR	Miscellaneous	0.000	0.247	11/00	0.000	11/01	0.000	N/A	CONT	CONT	N/A
ANSR Demonstration	TBD		0.000	0.000	N/A	8.000	TBD	0.000	N/A	CONT	CONT	8.000
	WR	NSWC	0.000	0.000	N/A	2.110	TBD	0.000	N/A	CONT	CONT	N/A
AMCGS Demonstration	FF	TBD	0.000	0.000	N/A	2.527	TBD	0.000	N/A	CONT	CONT	N/A
	WR	NSWC	0.000	0.000	N/A	0.050	TBD	0.000	N/A	CONT	CONT	N/A
MEMS	VAR	Miscellaneous	2.000							CONT	CONT	N/A
Systems Engineering	VAR	Miscellaneous	43.976	1.530	11/00	1.613	11/01	1.659	11/02	CONT	CONT	N/A
Award Fees	CPAF/IF	Raytheon, Tucson, AZ	2.282	0.000	N/A	1.185	06/02	0.480	11/02	CONT	CONT	4.156
Subtotal Product Development			291.940	40.521		38.000		22.687		CONT	CONT	CONT
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support	WR	NSWC	2.752	2.057	11/00	2.017	11/01	1.904	11/02	CONT	CONT	N/A
Configuration Management												
Technical Data												
GFE												
Subtotal Support			2.752	2.057		2.017		1.904		CONT	CONT	

R-1 SHOPPING LIST - Item No. 85 - 6 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Surface Fire Support/32156/32624/39051/39052						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC	8.654	7.888	11/00	7.030	11/01	12.994	11/02	CONT	CONT	N/A
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			8.654	7.888		7.030		12.994		CONT	CONT	N/A
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WR	NSWC	5.392	4.108	11/00	3.665	11/01	3.450	11/02	CONT	CONT	N/A
Program Management Support	WR	Various	5.255	2.764	11/00	4.177	11/01	3.631	11/02	CONT	CONT	N/A
Travel	PD	NAVSEA HQ	0.628	0.100	VAR	0.100	VAR	0.100	VAR	CONT	CONT	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			11.275	6.972		7.942		7.181		CONT	CONT	N/A
Remarks:												
Total Cost			314.821	57.438		54.989		44.766		CONT	CONT	CONT
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 7 of 85 -31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 7 of 31)






UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Advanced Land Attack Missile/32324				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	3.838	0.000	0.000	0.000	0.000	0.000	0.000	CONT	CONT
RDT&E Articles Qty									
<p>A. (U) Mission Description and Budget Item Justification: The Advanced Land Attack Missile (ALAM) and its associated weapons control system was intended to expand present interim capability provided by LASM in Aegis ships and to fully meet extended range requirements beyond present capability and service the land attack target set as derived from the OMFTS strategy. This capability was to be introduced into the DD21 Land Attack Destroyer to supplement its operational Mission Needs Statement. The ALAM was to exploit upcoming technologies to service high threat mobile, stationary and hardened targets during all stages of conflict. It was to be compatible with and integrated into future theater level command, control and other support weapons and systems. The Navy intends to pursue competition pending Navy and OSD leadership acquisition decisions.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> (U) (\$3.838) Completed Analysis of Alternatives (AoA): Planning for and initiating Component Advanced Development; Accomplish Decision Review. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> (U) (\$0) N/A <p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> (U) (\$0) N/A <p>B. (U) Other Program Funding Summary: N/A</p> <ul style="list-style-type: none"> (U) Related RDT&E,N: N/A <p>C. (U) Acquisition Strategy: N/A</p>									

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER			
RDT&E, N/BA-4		Land Attack Technology/0603795N				Advanced Land Attack Missile/32324			
D. (U) Schedule Profile:									
Fiscal Year	99	00	01	02	03	04	05	06	07
Quarter	I II III IV IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV
Milestone	MS 0   Decision Review								
Analysis of Alternatives	 — 18 months — 								
Component Advanced Development									
System Development and Demonstration									

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Land Attack Technology/0603795N			Advanced Land Attack Missile/32324						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target of Contract
Primary Hardware Dev Phase I & II	C/CP	ALAM Industry Team		1.500								
Ancillary Hardware Development												
Systems Engineering	WR	NSWC, Dahlgren, VA	0.447	0.250						CONT	CONT	
	SS/CPFF	JHU/APL, Laurel, MD	1.214	0.500						CONT	CONT	
	WR	NAWC, China Lake, CA	0.000	0.300						CONT	CONT	
	WR	CNA, Alexandria, VA	0.513	0.000						CONT	CONT	
Tooling												
GFE												
Award Fees												
Subtotal Product Development			2.174	2.550		0.000		0.000		CONT	CONT	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 10 of 85 - 31

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 10 of 31)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDTE, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Advanced Land Attack Missile/32324							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation													
Operational Test & Evaluation													
Tooling													
GFE													
Subtotal T&E			0.000	0.000		0.000		0.000		CONT	CONT		
Remarks:													
Contractor Engineering Support													
Government Engineering Support													
Program Management Support	VAR	VARIOUS	0.301	1.288	11/00	0.000		0.000					
Travel	PD	NAVSEA HQ	0.000	0.000		0.000		0.000					
Labor (Research Personnel)													
Overhead													
Subtotal Management			0.301	1.288		0.000		0.000		CONT	CONT		
Remarks:													
Total Cost			2.475	3.838		0.000		0.000		CONT	CONT		
Remarks:													

R-1 SHOPPING LIST - Item No. 85 - 11 of 85 - 31

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 11 of 29)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER				
RDT&E, N/BA-4	Land Attack Technology/0603795N				Naval Fires Control System (NFCS) & Land Attack Fire Control Systems (LAM FCS)/32325				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	47.080	48.403	29.163	28.863	18.606	13.699	9.755	CONT	CONT
RDT&E Articles Qty									
<p>A. (U) Mission Description and Budget Item Justification: Naval Fires Control System (NFCS) covers the mission planning and coordination for future Naval Surface Fire Support system requirements. NFCS will plan, coordinate and manage the firing of the new Naval Surface Fires Support (NSFS) weapon systems including the 5"/62 caliber gun, Conventional Munitions, and the Land Attack Missile (LAM) and LAM Fire Control. It will be available to amphibious ships, command ships, and the DD-21 program if selected by the full service contractor. The software will be integrated into Tactical TOMAHAWK Weapons Control Systems (TTWCS) in FY 2004, but will initially be hosted in the existing combat suite on DDG-81 for fleet introduction in FY 2002. Prototyping, demonstrations and developments were conducted during FY 2000 and FY 2001.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> - (U) (\$19.925) Software and system engineering to include analysis, development, reuse and integration of government and commercial computer programs to support ERGM, LAM and other naval weapon applications. - (U) (\$ 3.510) Support hardware configuration to support NFCS implementation. Support DT Validation. - (U) (\$ 2.649) Technical Direction Agent support, joint requirements investigation, Concept of Operations (CONOPs) scenario development. - (U) (\$ 0.981) C4I and combat system interface investigation and analysis to include BFTT, Link 16, TTWCS and other developing C4I system and technology. - (U) (\$ 1.366) Developmental test & evaluation, and logistic support elements development. - (U) (\$ 5.494) LAM integration design, development and integration includes modification to Vertical Launch System. - (U) (\$10.693) LAM Fire Control system engineering and software development including interface development with NFCS, GPS and other weapon systems. - (U) (\$ 1.962) LAM Fire Control Program management and logistic support elements development. - (U) (\$ 0.500) LAM Fire Control Development Test and Evaluation. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$16.584) Software and system engineering to include analysis, development, reuse and integration of government and commercial computer programs to support ERGM, LAM and other naval weapon applications. - (U) (\$ 3.651) Support hardware configuration to support NFCS implementation. Support DT Validation. - (U) (\$ 2.700) Technical Direction Agent support, joint requirements investigation, Concept of Operations (CONOPs) scenario development. - (U) (\$ 1.000) C4I and combat system interface investigation and analysis to include BFTT, Link 16, TTWCS and other developing C4I system and technology. 									

R-1 SHOPPING LIST - Item No. 85 - 12 of 85 - 29

Exhibit R-2a, RDT&E Project Justification
 (Exhibit R-2a, page 12 of 29)

UNCLASSIFIED

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EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002																																		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Fires Control System (NFCS) & Land Attack Fire Control (LAM FCS)/32325																																				
<p>2. (U) FY 2002 PLAN (Con't):</p> <ul style="list-style-type: none"> - (U) (\$ 3.500) Developmental test & evaluation, and logistic support elements development. - (U) (\$ 6.200) LAM integration design, development and integration includes modification to Vertical Launch System. - (U) (\$12.768) LAM Fire Control system engineering and software development including interface development with NFCS, GPS and other weapon systems. - (U) (\$ 1.500) LAM Fire Control Program management and logistic support elements development. - (U) (\$ 0.500) LAM Fire Control development test and evaluation. <p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$ 11.672) Software and system engineering to include analysis, development, reuse and integration of government and commercial computer programs to support ERGM and other naval weapon applications. - (U) (\$ 3.924) Support hardware configuration to support NFCS implementation. Support DT Validation. - (U) (\$ 6.723) Technical Direction Agent support, joint requirements investigation, Concept of Operations (CONOPs) scenario development. - (U) (\$ 2.000) C4I and combat system interface investigation and analysis to include BFTT, Link 16, TTWCS and other developing C4I system and technology. - (U) (\$ 4.844) Operational test & evaluation, and logistic support elements development. - <p>B. (U) Other Program Funding Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 5%; text-align: center;"><u>FY2000</u></th> <th style="width: 5%; text-align: center;"><u>FY2001</u></th> <th style="width: 5%; text-align: center;"><u>FY2002</u></th> <th style="width: 5%; text-align: center;"><u>FY2003</u></th> <th style="width: 5%; text-align: center;"><u>FY2004</u></th> <th style="width: 5%; text-align: center;"><u>FY2005</u></th> <th style="width: 5%; text-align: center;"><u>FY2006</u></th> <th style="width: 5%; text-align: center;"><u>FY2007</u></th> <th style="width: 10%; text-align: center;"><u>To Complete</u></th> <th style="width: 10%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>O&MN 1D4D,070812N</td> <td></td> <td></td> <td></td> <td style="text-align: center;">1.967</td> <td style="text-align: center;">2.830</td> <td style="text-align: center;">3.970</td> <td style="text-align: center;">2.937</td> <td style="text-align: center;">3.081</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> <tr> <td>OPN BL,511200</td> <td></td> <td></td> <td style="text-align: center;">.595</td> <td style="text-align: center;">5.690</td> <td style="text-align: center;">5.784</td> <td style="text-align: center;">4.085</td> <td style="text-align: center;">9.437</td> <td style="text-align: center;">5.172</td> <td style="text-align: center;">CONT.</td> <td style="text-align: center;">CONT.</td> </tr> </tbody> </table> <p>C. (U) Acquisition Strategy: The acquisition strategy has been approved. A sole source contract has been awarded to GDIS for Phase 1. Phase 1+ will be embedded in TTWCS along with the LAM FCS. Phase 2 requirements will be either competed or an existing system development contract will be used.</p>											<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>To Complete</u>	<u>Total Cost</u>	O&MN 1D4D,070812N				1.967	2.830	3.970	2.937	3.081	CONT.	CONT.	OPN BL,511200			.595	5.690	5.784	4.085	9.437	5.172	CONT.	CONT.
	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>To Complete</u>	<u>Total Cost</u>																																
O&MN 1D4D,070812N				1.967	2.830	3.970	2.937	3.081	CONT.	CONT.																																
OPN BL,511200			.595	5.690	5.784	4.085	9.437	5.172	CONT.	CONT.																																

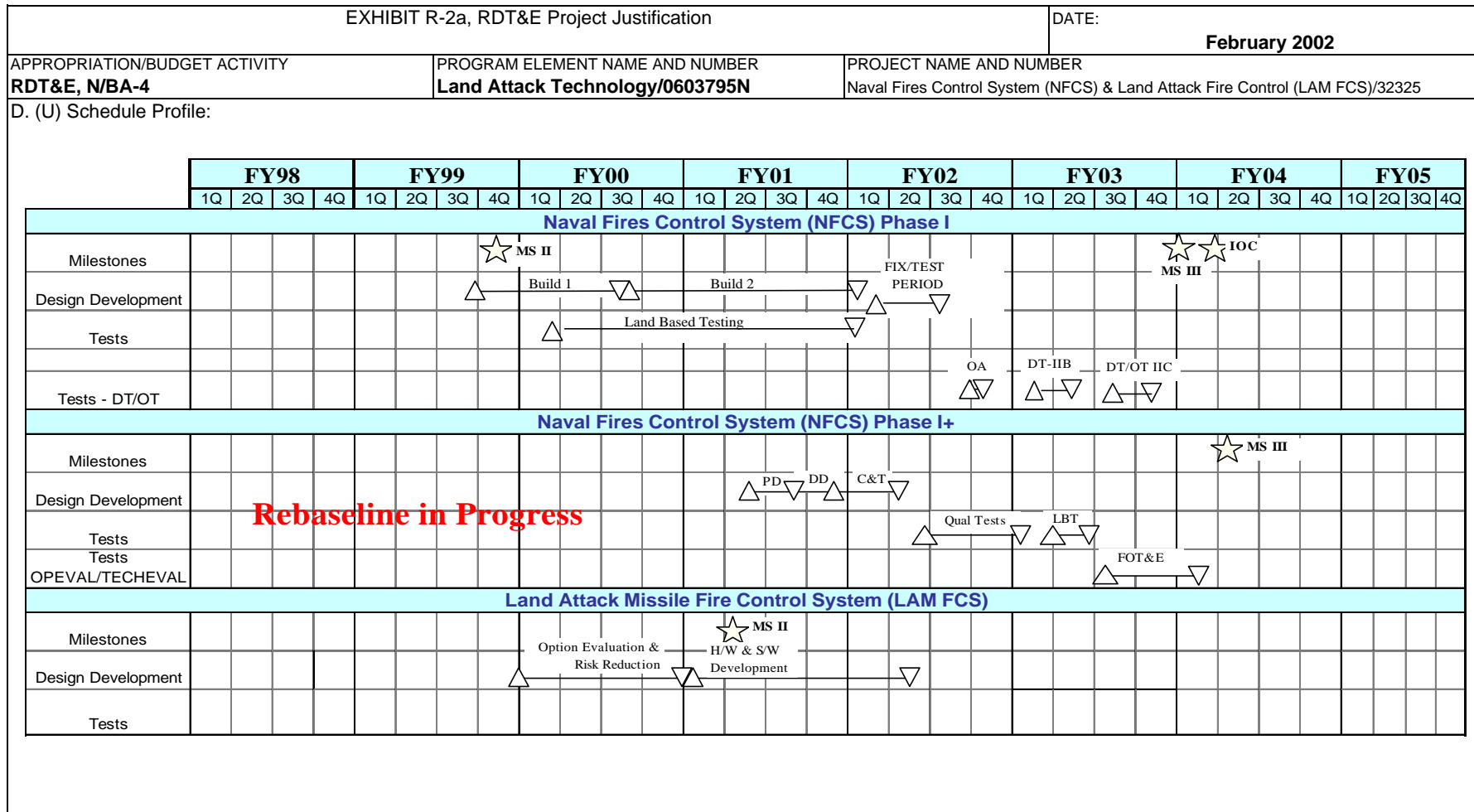
R-1 SHOPPING LIST - Item No. 85 - 13 of 85 - 31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 13 of 31)

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R-1 SHOPPING LIST - Item No. 85 - 14 of 85 -31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 14 of 31)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Land Attack Technology/0603795N			Naval Fires Control System (NFCS) & Land Attack Fire Control Systems (LAM FCS)/32325						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Software Development	SS/CPAF	GDIS, Arlington, VA	15.377	7.940	11/00	2.956	11/01	3.727	11/02	CONT	CONT	TBD
	SS/CPAF	LM/MDS, Valley Forge, PA	0.000	11.000	11/00	12.869	11/01	9.125	11/02	CONT	CONT	
	WR	NSWC, Dahlgren, VA	2.300							CONT	CONT	
	VAR	VARIOUS	1.619							CONT	CONT	
	WR	SSC/SD	0.000	1.295	10/00	1.100	10/01	1.100	10/02	CONT	CONT	
Systems Engineering	WR	SSC/SD	2.951							CONT	CONT	
	WR	NSWC, Dahlgren, VA	2.901	2.669	10/00	3.203	10/01	5.311	10/02	CONT	CONT	
	SS/CP	VITRO/BAE	0.600	0.070	11/00	0.000	N/A	0.000	N/A	CONT	CONT	
	VAR	VARIOUS	1.804							CONT	CONT	
Ancillary Harware Development	WR	NUWC, Keyport Division	6.100	1.289	10/00	0.935	10/01	1.259	10/02	CONT	CONT	
	WR	NSWC/PT HUE, CA	0.000	0.898	10/00	1.100	10/01	0.880	10/02	CONT	CONT	
	VAR	PMFATDS	0.000	0.500	10/00	0.709	10/01	1.100	10/02	CONT	CONT	
	SS/CPAF	JHU/APL	0.000	0.400	11/00	0.300	11/01	0.198	11/02	CONT	CONT	
	WR	NSWC, Dahlgren, VA	2.100	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	VAR	VARIOUS	2.541	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
LAM FC Hardware/Software Dev	SS/CPFF	LM/Baltimore, MD	0.000	3.689	11/00	4.500	11/01					
CANCELLED	SS/CPAF	LM/MDS, Valley Forge, PA	0.000	10.300	11/00	10.460	11/01					
	SS/CPFF	UDLP	0.000	0.455								
	WR	NSWC, Dahlgren, VA	0.000	0.854	10/00	0.843	10/01					
	WR	SSC/SD	0.000	0.400	10/00	0.440	10/01					
LAM FC Systems Engineering	SS/CPFF	JHU/APL	0.000	0.160	11/00	0.000	N/A					
CANCELLED	WR	NSWC/PT HUE, CA	0.000	0.150	10/00	0.165	10/01					
Award Fees			1.696	0.983	TBD	4.223	TBD	1.290	TBD	CONT	CONT	
Subtotal Product Development			39.989	43.052	10/00	43.803	10/01	23.990	10/02	CONT	CONT	
Remarks:												
Development Support Equipment												
Software Development		NSWC, Panama City	0.000	0.049								
Training Development												
Integrated Logistics Support	VAR	VARIOUS	2.170	1.331	Various	1.311	Various	1.387	Various	CONT	CONT	
Configuration Management												
Technical Data												
GFE												
Subtotal Support			2.170	1.380		1.311		1.387		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 15 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 15 of 31)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Land Attack Technology/0603795N			Naval Fires Control System (NFCS) & Land Attack Fire Control Systems (LAM FCS)/32325						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC/PT HUE, CA	0.800	0.000	N/A	2.000	10/01	1.000	10/02	CONT	CONT	
	VAR	Various	0.000	1.500	10/00							
Operational Test & Evaluation	VAR	Various	0.000	0.000	N/A	0.000	N/A	2.300	10/02			
Tooling												
GFE												
Subtotal T&E			0.800	1.500		2.000		3.300		CONT	CONT	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VAR	VARIOUS		1.093	Various	1.189	Various	0.386	Various			
Travel	PD	NAVSEA HQ	0.200	0.055	Various	0.100	Various	0.100	Various	CONT	CONT	
Labor (Research Personnel)												
Overhead												
Subtotal Management			0.200	1.148		1.289		0.486		CONT	CONT	
Remarks:												
Total Cost			43.159	47.080		48.403		29.163		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 16 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 16 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N				PROJECT NAME AND NUMBER Land Attack Standard Missile K2409					
COST (\$ in Millions)	PYs	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	30.794	21.086	9.399	0.000	0.000	0.000	0.000	0.000	0.000	61.279
RDT&E Articles Qty	8	5								13
<p>A. (U) Mission Description and Budget Item Justification: This project funds the Land Attack Standard Missile (LASM) (SM-4) program to provide responsive, all-weather, around-the-clock Naval Surface Fire Support to Ground Combat Elements beyond that which is available from gun systems. Major efforts involved are systems integration and testing. Systems integration consists of integrating Global Positioning System/Inertial Navigation System (GPS/INS) guidance, Height of Burst (HOB) sensor(s), warhead modifications, and new flight software to optimize effects against ground targets. Testing will include ground and flight tests to demonstrate safety, range, accuracy, jamming resistance, lethality, and reliability. RDT&E,N articles include Inert Operational Missiles (IOMs) and a Dynamic Inert Missile (DIM) for ground testing and complete All Up Rounds (AURs) for flight testing.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> - (U) (\$16.136) Continued mechanical/electrical designs, software design, round-level integration, and critical design review; initiated ground tests and integration of missile with ship systems; complete fabrication and delivery of IOM, DIM, and hardware for flight testing at White Sands Missile range (WSMR); held successful Critical Design Review. - (U) (\$1.000) Continued software validation and verification. - (U) (\$3.950) Began development of 6-Degrees of Freedom (DOF) modeling and simulation and computer-in-the-loop facility. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> (U) (\$3.000) Integrate hardware and software. (U) (\$2.400) Round-level integration. (U) (\$1.500) Ground testing (Battery). (U) (\$1.499) Complete section level and missile level environmental qualification. (U) (\$0.500) Validate 6-DOF modeling and simulation. (U) (\$0.500) Documentation and storage. 										

R-1 SHOPPING LIST - Item No. 85 - 17 of 85 -31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 17 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002																																		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Land Attack Standard Missile K2409																																				
<p>B. (U) Other Program Funding Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Cost</u></th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> <th style="text-align: center;"><u>FY 2004</u></th> <th style="text-align: center;"><u>FY 2005</u></th> <th style="text-align: center;"><u>FY 2006</u></th> <th style="text-align: center;"><u>FY 2007</u></th> <th style="text-align: center;"><u>To Complete</u></th> <th style="text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>WPN 223700</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>O&MN 1D3D, 0701113N</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.003</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.003</td> </tr> </tbody> </table> <p>(U) Related RDT&E,N: N/A</p> <p>C. (U) Acquisition Strategy: Pre Engineering and Manufacturing Development (E&MD) efforts were conducted under level of effort contracts with the SM-2 Design Agent (DA). A cost-plus E&MD completion contract was awarded to the DA to develop and integrate the necessary changes and to support Development Test/Operational Test (DT/OT) of LASM.</p>									<u>Cost</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>	WPN 223700	0	0	0	0	0	0	0	0	0	0	O&MN 1D3D, 0701113N	0	0.003	0	0	0	0	0	0	0	0.003
<u>Cost</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Complete</u>	<u>Total Cost</u>																															
WPN 223700	0	0	0	0	0	0	0	0	0	0																															
O&MN 1D3D, 0701113N	0	0.003	0	0	0	0	0	0	0	0.003																															

R-1 SHOPPING LIST - Item No. 85 - 18 of 85 -31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 18 of 31)

UNCLASSIFIED

CLASSIFICATION:

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Exhibit R-3 Cost Analysis (page 1)						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Land Attack Standard Missile K2409						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development	WR	NSWC/Dahlgren, VA	2.825	2.825	10/00	0.050	10/01				5.700	
	WR	VAR	0.675	0.825	10/00	0.100	10/01				1.600	
Systems Engineering	WR	VAR	4.666	1.720	10/00	0.300	10/01				6.686	
	SS/CPAF	Raytheon Missile Systems, Tucson,	17.112	11.543	10/00	7.559	10/01				36.214	
Award Fees			1.503	1.231	10/00	0.840	10/01				3.574	
Subtotal Product Development			26.781	18.144		8.849					53.774	
Remarks:												
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support	WR	VARIOUS	0.310	0.182	10/00	0.050	10/01				0.542	
Configuration Management	WR	VARIOUS	0.465	0.400	10/00	0.100	10/01				0.965	
Technical Data												
GFE												
Subtotal Support			0.775	0.582	01/00	0.150					1.507	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 -19 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 19 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Land Attack Standard Missile K2409						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWC/WD, White Sands	0.950	0.275	10/00	0.000	10/01				1.225	
	WR	VAR	0.235	0.700	10/00	0.150	10/01				1.085	
Operational Test & Evaluation	WR	NAWC/AD, Pt Mugu, CA	0.200	0.200	10/00	0.000	10/01				0.400	
	WR	VAR	0.090	0.120	10/00	0.000	10/01				0.210	
Tooling												
GFE												
Subtotal T&E			1.475	1.295		0.150					2.920	
Contractor Engineering Support	VAR	VAR	0.975	0.500	10/00	0.100	10/01				1.575	
Government Engineering Support												
Program Management Support	VAR	VAR	0.713	0.500	10/00	0.140	10/01				1.353	
Travel	PD	NAVSEA HQ	0.075	0.065	VAR	0.010	10/01				0.150	
Labor (Research Personnel)												
Overhead												
Subtotal Management			1.763	1.065		0.250					3.078	
Remarks:												
Total Cost			30.794	21.086		9.399					61.279	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 20 of 85 - 31

UNCLASSIFIED**Exhibit R-3, Project Cost Analysis**

(Exhibit R-3, page 20 of 31)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Fires Network/32927/32871					
COST (\$ in Millions)	FY 2001*	FY 2002**	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	10.915	34.191	34.764	34.852	49.636	49.550	49.472	CONT	CONT
Emergency Response Fund		73.46***							
RDT&E Articles Qty									
<p>*Funding includes NFN FY 2001 Congressional Add \$.993M, BTR \$9.922M **Funding includes NFN FY 2002 Congressional Add \$29.500M ***ERF,D Funding \$73.460 supports full systems scheduled to be installed aboard USS BLUE RIDGE, USS LA SALLE, USS LINCOLN.</p> <p>A. (U) Mission Description and Budget Item Justification: These funds provide for the Naval Fires Network (NFN) to develop a system which will automate, coordinate, and correlate, in a real time fashion, the processing of multiple tactical data streams from various surveillance/intelligence sources to provide time-critical fire control solutions for advanced weapon systems and sensors. The automation/correlation provided by NFN will provide the Navy an ability to quickly target and re-target precision weapons, greatly enhancing their effectiveness and lethality.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. (U) FY 2001 ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> - (U) (\$5.165) Limited Objective Experiment (LOE) 1, 2, and 3 completed. Fleet Battle Experiment (I) (FBE) completed. - (U) (\$5.000) FY01 Supplemental. RTC install on CVN1. Full system install preparation on CVN2. - (U) (\$.750) FY01 BTR- AOA Phase 1. <p>2. (U) FY 2002 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$.903) Development of hardware for NFN. - (U) (\$ 2.299) Development of software for NFN. - (U) (\$.350) Testing of on-board and land-based facilities. - (U) (\$ 8.800) Development of Tactical Dissemination Module (TDM). - (U) (\$.200) Acquisition Planning. - (U) (\$.900) Program management support. - (U) (\$17.739) Support hardware/software, GFE buy, installation and upgrades for existing interfaces and communications. - (U) (\$ 3.000) Training/Training System Development. 									

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY RDT&E, NBA-4	PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N	PROJECT NAME AND NUMBER Naval Fires Network/32927/32871
<p>3. (U) FY 2003 PLAN:</p> <ul style="list-style-type: none">- (U) (\$.360) Development of hardware for NFN.- (U) (\$ 2.659) Development of software for NFN.- (U) (\$.350) Testing of on-board and land-based facilities.- (U) (\$.300) Development of Tactical Dissemination Module (TDM).- (U) (\$ 3.000) Acquisition Planning/ DoD 5000 Documentation.- (U) (\$ 3.600) Acquisition Strategy, AoA, TEMP and other Required Acquisition Documentation.- (U) (\$18.000) Support hardware/software, GFE buy, installation and upgrades for existing interfaces and communications.- (U) (\$ 2.000) Provides onboard ship and intergrated logistics support.- (U) (\$ 1.200) Training/Training System Development.- (U) (\$ 2.000) P3I and future Limited Objective Experiments/ Fleet Battle Experiments. (LOE/FBE)- (U) (\$ 1.295) X, Ku, Phased Array Antenna System Development . <p>B. (U) Other Program Funding Summary: N/A</p> <p>(U) Related RDT&E,N: NAVAIRSYSCOM PE0204152N, FY 2001 \$5.765M</p> <p>C. (U) Acquisition Strategy: The Naval Fires Network (NFN) program will utilize contracting vehicles already in place for the existing Army Tactical Exploitation System (TES) program. The Navy plan is to adapt Army TES for use in NFN support of Navy Network Centric Warfare Time Critical Targeting.</p>		

R-1 SHOPPING LIST - Item No. 85- 22 of 85 - 31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 22 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2a, RDT&E Project Justification																			DATE:																
APPROPRIATION/BUDGET ACTIVITY									PROGRAM ELEMENT NAME AND NUMBER									PROJECT NAME AND NUMBER																	
RDT&E, N/BA-4									Land Attack Technology/0603795N									Naval Fires Network/32927/32871																	
E. (U) Schedule Profile																																			
				FY00				FY01				FY02				FY03				FY04				FY05				FY06							
		1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q
Naval Fires Network (NFN)																																			
Coronado Demo																																			
System Upgrade																																			
Acquisition Strategy, AoA, TEMP and other Required Documentation																																			

R-1 SHOPPING LIST - Item No. 85 - 23 of 85 - 31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 23 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Fires Network/32927/32871						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target of Contract
System Build	WR/MIPR	SAF/FMB/OLE (Air Force)	6.810	1.000	N/A	17.739	N/A	16.800	N/A	CONT	CONT	24.610
Modify System GFE	WR/MIPR	SAF/FMB/OLE (Air Force)	1.000	1.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	2.000
Training	WR/MIPR	SAF/FMB/OLE (Air Force)	0.400	0.700	N/A	0.000	N/A	1.200	N/A	CONT	CONT	2.300
Installation	WR	NSWC PHD, Pt. Hueneme, CA	0.170	1.100	N/A	0.000	N/A	2.000	N/A	CONT	CONT	3.270
LOE/FBE "I"	CPFF/IF/AF	VARIOUS	0.000	1.819	11/00	0.000	N/A	2.000	N/A	CONT	CONT	3.819
	WR	VARIOUS	0.000	3.624	11/00	0.000	N/A	0.000	N/A	CONT	CONT	N/A
AOA	WR	VARIOUS	0.000	0.750	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
Primary Hardware Development	CPFF/IF/AF	VARIOUS	0.000	0.000	N/A	0.830	11/01	0.317	11/02	CONT	CONT	2.100
	WR/MIPR	SAF/FMB/OLE (Air Force)	0.000	0.000	N/A	0.073	11/01	0.043	11/02	CONT	CONT	N/A
Primary Software Development	CPFF/IF/AF	VARIOUS	0.000	0.000	N/A	2.040	11/01	2.312	11/02	CONT	CONT	4.583
	WR/MIPR	SAF/FMB/OLE (Air Force)	0.000	0.000	N/A	0.259	11/01	0.347	11/02	CONT	CONT	N/A
Testing	CPFF/IF/AF	VARIOUS	0.000	0.000	N/A	0.310	11/01	0.310	11/02	CONT	CONT	2.100
	WR/MIPR	SAF/FMB/OLE (Air Force)	0.000	0.000	N/A	0.040	11/01	0.040	11/02	CONT	CONT	N/A
TDM	WR	NAWC China Lake	0.000	0.000	N/A	8.800	11/01	0.300	11/02	CONT	CONT	N/A
Training/ Training Syst. Development	CPFF/IF/AF	VARIOUS	0.000	0.000	N/A	3.000	N/A	1.200	11/02	CONT	CONT	N/A
X, Ku, PAA Development	CPFF/IF/AF	VARIOUS	0.000	0.000	N/A	0.000	N/A	1.295	11/02	CONT	CONT	N/A
Acquisition Planning	WR	NSWC Dahlgren, VA	0.000	0.000	N/A	0.200	11/01	3.000	11/02	CONT	CONT	N/A
Subtotal Product Development			8.380	9.993		33.291		31.164		CONT	CONT	CONT
Remarks:												
Technical Data												
GFE				0.600								
Subtotal Support			0.000	0.600		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 24 of 85 -31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 24 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Fires Network/32927/32871				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
Developmental Test & Evaluation										
Operational Test & Evaluation										
Tooling										
GFE										
Subtotal T&E			0.000	0.000		0.000		0.000		
Remarks:										
Contractor Engineering Support					N/A					
Government Engineering Support					N/A					
Program Management Support	VAR	VARIOUS	1.020	0.172	N/A	0.800	10/01	3.400	10/02	N/A
Travel	PD	NAVSEA HQ	0.100	0.150	N/A	0.100	VAR	0.200	VAR	N/A
Labor (Research Personnel)										
Overhead										
Subtotal Management			1.120	0.322		0.900		3.600		
Remarks:										
Total Cost			9.500	10.915		34.191		34.764		CONT
Remarks:										

R-1 SHOPPING LIST - Item No. 85 - 25 of 85 - 31

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 25 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2002					
APPROPRIATION/BUDGET ACTIVITY RDT&E, NERF,D			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Naval Fires Network/						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target of Contract
System Build	WR/MIPR	SAF/FMB/OLE (Air Force)				42.183						
Modify System GFE	WR/MIPR	SAF/FMB/OLE (Air Force)				12.052						
Training	WR/MIPR	SAF/FMB/OLE (Air Force)				6.026						
Installation	WR	NSWC PHD, Pt. Hueneme, CA				0.470						
LOE/FBE "I"	CPFF/IF/AF	VARIOUS										
	WR	VARIOUS										
AOA	WR	VARIOUS										
Primary Hardware Development	CPFF/IF/AF	VARIOUS										
	WR/MIPR	SAF/FMB/OLE (Air Force)										
Primary Software Development	CPFF/IF/AF	VARIOUS										
	WR/MIPR	SAF/FMB/OLE (Air Force)										
Testing	CPFF/IF/AF	VARIOUS										
	WR/MIPR	SAF/FMB/OLE (Air Force)										
Development of JTAAC	MIPR	JHU/APL				3.000	N/A					
TDM	WR	NAWC China Lake										
Training/ Training Syst. Development	CPFF/IF/AF	VARIOUS										
X, Ku, PAA Development	CPFF/IF/AF	VARIOUS										
Acquisition Planning	WR	NSWC Dahlgren, VA										
Subtotal Product Development												
Remarks:												
Technical Data												
GFE												
Subtotal Support						63.731						
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 26 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 26 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER					
RDT&E, N/ERF,D			Land Attack Technology/0603795N			Naval Fires Network/					
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract	
Developmental Test & Evaluation											
Operational Test & Evaluation											
Tooling											
GFE											
Subtotal T&E											
Remarks:											
Engineering/Technical Support						9.729	N/A				
Program Management Support											
Travel											
Labor (Research Personnel)											
Overhead											
Subtotal Management						9.729					
Remarks:											
Total Cost						73.460					
Remarks:											

R-1 SHOPPING LIST - Item No. 85 - 27 of 85 - 31

UNCLASSIFIED

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 27 of 31)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: January 200 February 2002					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4		Land Attack Technology/06037951		PROJECT NAME AND NUMBER Integrated DeepWater System/39053					
COST (\$ in Millions)	FY 2001	FY 2002*	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	ost to Comple	Total Cost
Project Cost	0.000	2.081	0.000	0.000	0.000	0.000	0.000	CONT	CONT
RDT&E Articles Qty									

*Funding includes FY2002 IDS Congressional Add - \$2.081M

A. (U) Mission Description and Budget Item Justification: These funds provide for evaluation of NDI Intermediate Caliber Gun Systems for application in USN Surface Combatants and USCG Cutters. The evaluation effort will include reliability demonstrations, maintainability demonstrations, gun system firing exercises and selected munition evaluations.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS: N/A

2. (U) FY 2002 PLAN:

- (U) (\$.880) Intermediate Caliber gun system reliability/maintainability demonstrations.
- (U) (\$.556) Intermediate caliber munition evaluation.
- (U) (\$.645) Gun System firing exercises.

3. (U) FY2003 PLAN: N/A

B. (U) Other Program Funding Summary: N/A

C. (U) Acquisition Strategy: The Naval Surface Warfare Center, Port Hueneme Division, Louisville Detachment, is to develop an evaluation plan with demonstration activity to be conducted at the NSWC Louisville facility and the NSWC Dahlgren facility. Upon completion of the government conducted evaluation process, the USN will identify the appropriate ICGS for application in USN and USCG ships. The ICGS evaluation is to be conducted by NSWC since they are responsible for all USN gunnery.

CLASSIFICATION:

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N/BA-4		PROGRAM ELEMENT NAME AND NUMBER Land Attack Technology/0603795N		PROJECT NAME AND NUMBER Integrated Deep Water System Program/39053			
E. (U) Schedule Profile							
	FY02						
	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
	Integrated Deep Water System Program						
Program Planning	△ → ▽						
Reliability Demo		△ → ▽					
Maintainability Demo			△ → ▽				
Gun Firing Demo					△ → ▽		
Munitions Evaluation						△ → ▽	
Prepare Report							△ → ▽

R-1 SHOPPING LIST - Item No. 85 - 29 of 85 -31

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, page 29 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)									DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Land Attack Technology/0603795N			Integrated Deep Water System Program/39053						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target of Contract
IDS Demonstration	WR	NSWC, Louisville	0.000	0.000	N/A	1.980	03/02	0.000	N/A	CONT	CONT	N/A
Subtotal Demonstration			0.000	0.000		1.980		0.000	N/A	CONT	CONT	CONT
Remarks:												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 85 - 30 of 85 - 31

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 30 of 31)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4			PROGRAM ELEMENT Land Attack Technology/0603795N			PROJECT NAME AND NUMBER Integrated Deep Water System Program/39053				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Target Value of Contract
Developmental Test & Evaluation										
Operational Test & Evaluation										
Tooling										
GFE										
Subtotal T&E			0.000	0.000		0.000		0.000		
Remarks:										
Contractor Engineering Support										
Government Engineering Support										
Program Management Support	VAR	VARIOUS	0.000	0.000	N/A	0.076	03/02	0.000	N/A	N/A
Travel	PD	NAVSEA HQ	0.000	0.000	N/A	0.025	03/02	0.000	N/A	N/A
Labor (Research Personnel)										
Overhead										
Subtotal Management			0.000	0.000		0.101		0.000		
Remarks:										
Total Cost			0.000	0.000		2.081		0.000		CONT
Remarks:										

R-1 SHOPPING LIST - Item No. 85 - 31 of 85 - 31

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 31 of 31)

UNCLASSIFIED

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EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

(U) COST (Dollars in Millions)

PROJECT NUMBER TITLE PROGRAM	PRIOR YEAR COST	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	COST TO COMPLETE	TOTAL PROGRAM
D2209 JSF	1,609.453	341.164								1,950.617

Quantity of RDT&E Articles: (4 in FY 2000)

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike fighter aircraft for the USN, USMC, USAF and allies. This current phase emphasizes facilitating the evolution of fully validated and affordable joint operational requirements, and demonstrating cost leveraging technologies and concepts to lower risk prior to entering System Development and Demonstration (SDD) in October 2001. This is a joint program with no executive service. Navy and Air Force each provide approximately equal shares of annual funding for the program. The United Kingdom is a collaborative partner in this phase of the program and several other countries also participate.

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

UNCLASSIFIED

EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

(U) COST (Dollars in Millions)

PROJECT NUMBER TITLE PROGRAM	PRIOR YEAR COST	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	COST TO COMPLETE	TOTAL PROGRAM
D2209 JSF	1,609.453	341.164								1,950.617

Quantity of RDT&E Articles: (4 in FY 2000)

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike fighter aircraft for the USN, USMC, USAF and allies. This current phase emphasizes facilitating the evolution of fully validated and affordable joint operational requirements, and demonstrating cost leveraging technologies and concepts to lower risk prior to entering System Development and Demonstration (SDD) in October 2001. This is a joint program with no executive service. Navy and Air Force each provide approximately equal shares of annual funding for the program. The United Kingdom is a collaborative partner in this phase of the program and several other countries also participate.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS: (Breakout reflects Navy, Air Force, United Kingdom and Multi-Lateral funding)

- (U) (\$311.113) Completed Concept Demonstration efforts by Boeing, Lockheed Martin and Pratt & Whitney including ground and flight demonstrations, areas of technology maturation and concept refinement for a tri-service family of aircraft. Requested proposals from contractors for their designs and SDD programs.
- (U) (\$ 147.000) Completed transition risk reduction activities under bridge contracts with Boeing, Lockheed Martin and Pratt & Whitney, and funded Pratt & Whitney long-lead requirements to protect SDD schedule.
- (U) (\$ 111.064) Completed the GE JSF Engine Phase IIIa effort and commenced Phase IIIb effort. GE Engine Development Program continues in JSF Program Elements 0604800N and 0604800F.
- (U) (\$ 57.080) Completed assessments/system engineering support for the Concept Demonstration Phase in the areas of airframe, flight systems, manufacturing and producibility, mission systems, propulsion, autonomic logistics, system test, air vehicle analysis and integration, advanced cost estimating, survivability, integrated flight and propulsion control and carrier suitability. Completed analyses required for Milestone B. Conducted source selection evaluation to support down-select for final design.

UNCLASSIFIED

EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

• (U) (\$ 27.069) Completed modeling and simulation activities to support required Milestone B analyses. Completed modeling and simulation support testing, training, and refinement of concept of operations for the weapons system (simulation based acquisition).

• (U) (\$ 31.505) Completed mission support, including program office functions.

• (U) (\$684.831) Total

2. (U) FY 2002 PLAN: Not Applicable

3. (U) FY 2003 PLAN: Not Applicable

(U) B. PROGRAM CHANGE SUMMARY: (Dollars in Millions)

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
(U) FY 2002 President's Budget:	\$341.164	\$ 0	\$ 0
(U) Adjustments from the FY 2002 President's Budget:	0		
(U) FY 2003 President's Budget:	\$341.164	\$ 0	\$ 0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Not applicable.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

(U) C. OTHER PROGRAM FUNDING SUMMARY: (Dollars in Millions) This is a joint program with no executive service. The United Kingdom is a collaborative partner in this phase of the program and several other countries also participate.

Appn	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>TO COMPLETE</u>	<u>TOTAL COST</u>
(U) RDT&E 0603800F	\$341.167								\$1,907.352
(U) RDT&E 0603800E	0								\$118.006
(U) UNITED KINGDOM	\$.800								\$201.221
(U) MULTI- LATERAL	\$1.700								\$32.100
(U) CANADA	0								\$10.600
(U) ITALY	0								\$10.000

(U) RELATED RDT&E: (Dollars in Millions)

Milestone B for SDD of the Joint Strike Fighter (JSF) occurred in October 2001.

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>TO COMPLETE</u>	<u>TOTAL COST</u>
(U) RDT&E 0604800N		\$762.957	\$1,727.500	\$1,931.753	\$2,489.103	\$1,987.246	\$1,689.760	Continuing	TBD
(U) RDT&E 0604800F		\$761.893	\$1,743.668	\$1,941.951	\$2,485.774	\$1,984.386	\$1,686.592	Continuing	TBD
(U) UNITED KINGDOM		\$95.000	\$161.000	\$200.000	\$356.000	\$384.000	\$355.000	Continuing	TBD

(U) RELATED PROCUREMENT FUNDING:

Advanced Procurement for the Joint Strike Fighter (JSF) is planned in FY 2005.

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>TO COMPLETE</u>	<u>TOTAL COST</u>
(U) USAF 0207142F					\$74.014	\$1,042.863	\$1,815.676	Continuing	TBD
(U) APN-1 0204146N					\$50.079	\$762.878	\$1,325.330	Continuing	TBD

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EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

(U) D. ACQUISITION STRATEGY:

Program activities in this phase centered around three distinct objectives that provided a sound foundation for the start of System Development and Demonstration (SDD) in Fall 2001:

- (1) facilitated the Services' development of fully validated, affordable operational requirements;
- (2) lowered risk by investing in and demonstrating key leveraging technologies that lower the cost of development, production and ownership; and
- (3) demonstrated operational concepts.

Early warfighter and technologist interaction was an essential aspect of the requirements definition process, and key to achieving JSF affordability goals. To an unprecedented degree the JSF Program used cost-performance trades early, as an integral part of the weapon system development process. The Services defined requirements through an iterative process, balancing weapon system capability against life cycle cost at every stage. Each iteration of requirements was provided to industry. They evolved their designs and provided cost data back to the warfighters. The warfighters evaluated trades and made decisions for the next iteration. This iterative process produced iterations of the Services' Joint Interim Requirements Documents in 1995, 1997, 1998 and culminated in the approved joint Operational Requirements Document (ORD) in FY 2000.

A sizable technology maturation effort was conducted to reduce risk and life cycle cost (LCC) through technology maturation and demonstrations. The primary emphasis was on technologies identified as high payoff contributors to affordability, supportability, survivability and lethality. Numerous demonstrations were accomplished to validate performance and life cycle cost impact to component, subsystem, and the total system.

In November 1996 contracts were competitively awarded to Boeing and Lockheed Martin for Concept Demonstration Programs. These competing contractors built and flew concept demonstrator aircraft, conducted concept unique ground demonstrators, and refined their respective weapon system concepts. Specifically, Boeing and Lockheed Martin are demonstrated commonality and modularity, STOVL hover and transition, and low speed handling qualities of their respective weapon system concepts. Pratt and Whitney provided propulsion hardware and engineering support. General Electric continued development of a second, interchangeable, engine for competition in production.

Following evaluation of proposals and a favorable Milestone B decision, the JSF Program entered SDD on 26 October 2001 with SDD contract awards to Lockheed Martin and Pratt & Whitney. The SDD plan reflects a block approach, based on an open systems architecture, for accomplishing aircraft and weapons integration. General Electric continues propulsion development efforts.

Procurement of the USAF and USMC JSF variants is planned to begin in FY 2006, with advance procurement for Lot 1 in FY 2005. Procurement of the Navy JSF variant is planned to begin in FY 2008, with advance procurement for Lot 3 in FY 2007.

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EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603800N

PROGRAM ELEMENT TITLE: JOINT STRIKE FIGHTER (JSF) PROGRAM

(U) E. SCHEDULE PROFILE:

Dec 94 Commenced Concept Development Phase

Mar 96 Released RFP for Concept Demonstration Efforts

May 96 Designated a Joint, DOD, Acquisition Category ID Program by USD(A&T)

Nov 96 Competitively Awarded Concept Demonstration Contracts to Boeing and Lockheed Martin

Mar 00 Services Completed Joint Operational Requirements Document (ORD)

Oct 01 Milestone B and SDD Contract Award

R-1 Item No. 86

Exhibit R-2a, RDT&E Project Justification
(Exhibit R-2a, Page 6 of 11)

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EXHIBIT R-3, FY 2003 RDT&E,N COST ANALYSIS

DATE: February 2002

BUDGET ACTIVITY: 4	PROGRAM ELEMENT:	0603800N	USN
BUDGET ACTIVITY: 4	PROGRAM ELEMENT:	0603800F	USAF
BUDGET ACTIVITY: 3	PROGRAM ELEMENT:	0603800E	DARPA
BUDGET ACTIVITY: NA	PROGRAM ELEMENT:	N/A	UNITED KINGDOM
BUDGET ACTIVITY: NA	PROGRAM ELEMENT:	N/A	MULTI-LATERAL
BUDGET ACTIVITY: NA	PROGRAM ELEMENT:	N/A	CANADA
BUDGET ACTIVITY: NA	PROGRAM ELEMENT:	N/A	ITALY
	PROGRAM ELEMENT TITLE:	JOINT STRIKE FIGHTER (JSF)	

PROJECT NUMBER:	D2209
PROJECT NUMBER:	2025
PROJECT NUMBER:	JA-01
PROJECT NUMBER:	UK
PROJECT NUMBER:	ML
PROJECT NUMBER:	CAN
PROJECT NUMBER:	ITALY
PROJECT TITLE:	JSF

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING (\$ in Millions) No budget in FY 1993 and Prior.

[illegible]

R-1 Item No. 86

Exhibit R-3, RDT&E Cost Analysis
(Exhibit R-3, Page 7 of 11)

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EXHIBIT R-3, FY 2003 RDT&E,N COST ANALYSIS

DATE: February 2002

Contract	Performing			FY 2001		FY 2002		FY 2003			Target
Method	Activity &	Total	FY 2001	Award	FY 2002	Award	FY 2003	Award	Cost To	Total	Value of
<u>Cost Categories:</u>	<u>& Type</u>	<u>PY's Cost</u>	<u>Cost</u>	<u>Date</u>	<u>Cost</u>	<u>Date</u>	<u>Cost</u>	<u>Date</u>	<u>Complete</u>	<u>Cost</u>	<u>Contract</u>
<u>Weapon System Concept Demonstrations (including flying demonstrators and supporting propulsion efforts)</u>											
C/CPFF	Boeing *	718.029	57.569	Oct 00						775.598	775.598
C/CPFF	Lockheed *	783.004	130.850	Oct 00						913.854	913.854
SS/CPFF	Pratt & Whitney *	836.961	122.694	Oct 00						959.655	997.045
	Hartford CT										

*includes government managed equipment

Note: Boeing, Lockheed Martin and Pratt & Whitney Total Costs and Target Values of Contracts reflect preliminary close-out costs associated with the Concept Demonstration contracts.

Lockheed Martin Total Cost and Target Value of Contract excludes contractor investment.

Pratt and Whitney Total Value of Contract reflects award fees totaling \$35.1M for FY 1998 and prior, and also reflects basic CDP efforts and technology maturation efforts in Propulsion and Prognostics and Health Management.

Award Fees (included in Pratt & Whitney Contract)

SUBTOTAL	2,338.123	311.113		2,649.107
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Transition Risk Reduction Activities

SS/FFP	Boeing	35.000	Apr 01	35.000	35.000
SS/FFP	Lockheed Martin	35.000	Apr 01	35.000	35.000
SS/CPFF	Pratt & Whitney	52.675	Apr 01	52.675	52.675
SS/CPAF	Pratt & Whitney	<u>24.325</u>	Nov 01	<u>24.325</u>	
SUBTOTAL		147.000		147.000	

Note: FY 2001 scope and funding for long lead materials included in the P&W Risk Reduction contract was transferred to the P&W SDD contract after SDD award as planned.

GE Engine

SS/CPFF	GE	7.000			7.000
	Cincinnati OH				
SS/CPFF	GE	<u>138.263</u>	<u>111.064</u>	Oct 00	<u>249.327</u>
SUBTOTAL		145.263	111.064		256.327

Note: Total Cost includes \$65.5M for Phase IIIb of GE development effort.

R-1 Item No. 86

Exhibit R-3, RDT&E Cost Analysis
(Exhibit R-3, Page 8 of 11)

UNCLASSIFIED

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EXHIBIT R-3, FY 2003 RDT&E,N COST ANALYSIS

DATE: February 2002

Contract Method <u>Cost Categories:</u> <u>& Type</u>	Performing Activity & <u>Location</u>	Total <u>PY's Cost</u>	FY 2001 <u>Cost</u>	FY 2001 Award <u>Date</u>	FY 2002 <u>Cost</u>	FY 2002 Award <u>Date</u>	FY 2003 <u>Cost</u>	FY 2003 Award <u>Date</u>	Cost To <u>Complete</u>	Total <u>Cost</u>	Target Value of <u>Contract</u>
<u>Technology Maturation</u>											
<u>Airframe</u>											
SS/CPFF	McAir	19.240								19.240	
Various	Miscellaneous	2.135	.023	Various						2.158	
Various	Fld. Activ.	<u>6.777</u>	<u>1.442</u>	Nov 00						<u>8.219</u>	
SUBTOTAL		28.152	1.465							29.617	
<u>Flight Systems</u>											
C/CPFF	Lockheed	52.201								52.201	
C/CPFF	McAir	65.944								65.944	
Various	Miscellaneous	10.141	.178	Various						10.319	
Various	Fld. Activ.	<u>20.982</u>	<u>2.741</u>	Nov 00						<u>23.723</u>	
SUBTOTAL		149.268	2.919							152.187	
<u>Manufacturing and Producibility</u>											
C/CPFF	Hughes	5.065								5.065	
	Los Angeles CA										
C/CPFF	Lockheed	9.600								9.600	
	General Res.										
C/CPFF	Corp.	1.945								1.945	
	Huntsville AL										
C/CPFF	Scaled Composites	2.000								2.000	
C/CPFF	Lockheed	.700								.700	
Various	Miscellaneous	1.619								1.619	
Various	Fld. Activ.	<u>5.148</u>	<u>.273</u>	Nov 00						<u>5.421</u>	
SUBTOTAL		26.077	.273							26.350	
<u>Propulsion</u>											
C/CPFF	Pratt/Whitney	5.448								5.448	
SS/CPFF	GE	5.681								5.681	
SS/CPFF	Pratt/Whitney	30.000								30.000	
SS/CPFF	GE	3.000								3.000	
SS/CPFF	Pratt/Whitney	26.777								26.777	
SS/CPFF	Pratt & Whitney	3.640								3.640	
SS/TBD	Pratt & Whitney	8.200								8.200	
NASA Contract		2.800								2.800	
Various	Miscellaneous	14.795	.050	Various						14.845	
Various	Fld. Activ.	<u>47.893</u>	<u>3.749</u>	Nov 00						<u>51.642</u>	
SUBTOTAL		148.234	3.799							152.033	

R-1 Item No. 86

Exhibit R-3, RDT&E Cost Analysis
(Exhibit R-3, Page 9 of 11)

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EXHIBIT R-3, FY 2003 RDT&E,N COST ANALYSIS

DATE: February 2002

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total PY's Cost</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>FY 2002 Cost</u>	<u>FY 2002 Award Date</u>	<u>FY 2003 Cost</u>	<u>FY 2003 Award Date</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
<u>Mission Systems</u>	C/CPFF	TI	2.464								2.464	
		Plano TX										
	SS/CPFF	Lockheed	6.856								6.856	
	SS/CPFF	McAir	6.524								6.524	
	C/CPFF	Raytheon	45.173								45.173	
	C/CPFF	Northrop/Grumman	41.903								41.903	
	C/CPFF	Boeing	1.575								1.575	
	C/CPFF	Lockheed	1.517								1.517	
	C/CPFF	Hughes	3.681								3.681	
	Classified	Classified	3.000								3.000	
	Various	Miscellaneous	24.856	.221	Various						25.077	
	Various	Fld. Activ.	<u>33.587</u>	<u>6.572</u>	Nov 00						<u>40.159</u>	
	SUBTOTAL		171.136	6.793							177.929	
<u>Systems Engineering Support</u>												
	Various	Miscellaneous	24.642	5.626	Various						30.268	
	Various	Fld. Activ.	<u>114.195</u>	<u>26.819</u>	Nov 00						<u>141.014</u>	
	SUBTOTAL		138.837	32.445							171.282	
<u>Autonomic Logistics</u>												
	C/CPFF	Pratt & Whitney	10.100								10.100	
	C/CPFF	General Electric	1.500								1.500	
	C/CPFF	Classified										
	C/CPFF	Project 3	8.576								8.576	
	C/CPFF	Project 4	5.549								5.549	
	Various	Miscellaneous	9.584	1.571	Various						11.155	
		Fld. Activ.	<u>15.677</u>	<u>6.895</u>	Nov 00						<u>22.572</u>	
	SUBTOTAL		50.986	8.466							59.452	
<u>Modeling, Simulation, Analysis, Threat, COPT and Core Support</u>												
	Various	Miscellaneous	47.737	11.763	Various						59.500	
	Various	Fld. Activ.	<u>32.874</u>	<u>14.906</u>	Nov 00						<u>47.780</u>	
	SUBTOTAL		80.611	26.669							107.280	

R-1 Item No. 86

Exhibit R-3, RDT&E Cost Analysis
(Exhibit R-3, Page 10 of 11)

UNCLASSIFIED

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EXHIBIT R-3, FY 2003 RDT&E,N COST ANALYSIS

DATE: February 2002

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total PY's Cost</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>FY 2002 Cost</u>	<u>FY 2002 Award Date</u>	<u>FY 2003 Cost</u>	<u>FY 2003 Award Date</u>	<u>Cost To Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
<u>Mission Support</u>												
	Grant	Institute for Defense Anal.	2.500								2.500	
	Various	Fld. Activ.	<u>32.998</u>	<u>8.554</u>	Various						<u>41.552</u>	
SUBTOTAL			35.498	8.554							44.052	
Subtotal Project Development			3,488.222	660.560							4,148.782	
<u>SUPPORT (CS)</u>												
	SS/CPFF	ANSER Arlington VA	28.981	1.144	Jan 01						30.125	
	C/CPFF	SVERDRUP/ANTEON Arlington, VA		3.668	Apr 01						3.668	
	SS/CPFF	Stanley Assoc. Arlington, VA		9.434	Apr 01						9.434	
	C/CPFF	AEGIS Arlington, VA		2.017	Apr 01						2.017	
	Various	Miscellaneous	<u>27.862</u>	<u>8.008</u>	Various						<u>35.870</u>	
Subtotal Support			56.843	24.271							81.114	
<u>TEST AND EVALUATION:</u> (included above)												
<u>MANAGEMENT:</u> N/A												
Total Cost			3,545.065	684.831							4,229.896	
Funding Resources												
0603800N			1,609.453	341.164							1,950.617	
0603800F			1,566.185	341.167							1,907.352	
0603800E			118.006	0							118.006	
United Kingdom			200.421	0.800							201.221	
Multi-Lateral			30.400	1.700							32.100	
Canada			10.600	0							10.600	
Italy			<u>10.000</u>	<u>0</u>							<u>10.000</u>	
Total			3,545.065	684.831							4,229.896	

R-1 Item No. 86

Exhibit R-3, RDT&E Cost Analysis
(Exhibit R-3, Page 11 of 11)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation	PROGRAM ELEMENT NUMBER AND NAME 0603851M Non-Lethal Warfare DEM/VAL				PROJECT NUMBER AND NAME C2319 Non-Lethal Weapons Program				
COST (\$ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	28.115	35.095	24.082	26.032	26.450	27.019	27.530	Cont	Cont
RDT&E Articles Qty									
(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project covers non-lethal weapon (NLW) systems which are those systems that by their design, do not inflict fatal or permanent injuries. 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. PROGRAM ACCOMPLISHMENTS AND PLANS FY 2001 Planned Program <ul style="list-style-type: none">• (U) \$ 1.379 Executed and over-saw, administration and support of the Joint NLW Program and technologies database.• (U) \$ 1.862 Evaluated NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various NL technologies and munitions.• (U) \$ 0.891 Initialed modeling and simulation validation and verification of NLW in the Joint Conflict and Tactical Simulation (JCATS) model and performance effects data collection.• (U) \$ 1.080 Continued pursuit of new technology through open competition of industry, academia and government lab sources for NL capabilities.• (U) \$ 0.615 66mm NL Grenades – Completed Engineering & Manufacturing Development of 66mm vehicle launched grenades for crowd control and site security missions.• (U) \$ 0.887 Program Support for each service’s oversight and administration of the Joint NLW Program.• (U) \$ 0.189 Ground Vehicle Stopper (GVS) –Completed evaluation of several proposed vehicle stopper technologies that have potential to stop/slow ground vehicles.• (U) \$ 2.000 Continued the non-lethal technology innovation initiative to allow pursuit of new NL materials and technologies.• (U) \$ 4.536 Vehicle Mounted Active Denial System (VMADS) - Continued evaluation, testing and target assessment of a HMMWV mounted directed energy system.• (U) \$ 0.513 Running Gear Entanglement System (RGES) – Continued development of a “prop” entanglement capability to stop small, fast moving boats.• (U) \$ 1.851 Developed and evaluated new RDT&E NLW technology initiatives.• (U) \$ 1.425 Foams - Continued evaluation, analysis and testing of both rigid and slippery foams and delivery methods/volumes.• (U) \$ 2.052 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.• (U) \$ 3.900 Concept Exploration Program – Continued to explore and analyze technical NL solutions for clearing facilities and area denial to personnel, and to initiate the exploration of technical solutions to incapacitate personnel, crowd control, disable vessels, and area denial to vehicles.• (U) \$ 0.752 Joint Integration Program (JIP) – Continued to select and test commercial products that will meet Joint Services’ requirement for specific NL capability set common items.• (U) \$ 0.183 40mm NL Crowd Dispersal Cartridge – Complete Engineering & Manufacturing Development of a 40mm sting ball with improved range for the M203 40mm Grenade Launcher.• (U) \$ 1.000 NL Mortar – Initiated the development and evaluation of NL mortar demonstrators with a frangible or combustible casing.• (U) \$ 2.000 Initiated an environmental evaluation, impact and safety assessment, technology and remediation capability for NLW candidate systems.• (U) \$ 1.000 Initiated a comprehensive study of the applicability of NL technology area to Weapons of Mass Destruction (WMD). (U) Total \$ 28.115									

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EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N/BA-4 Demonstration/Validation	0603851M Non-Lethal Warfare DEM/VAL	C2319 Non-Lethal Weapons Program
FY 2002 Planned Program		
<ul style="list-style-type: none"> (U) \$ 1.630 Execution oversight, administration and support of the Joint NLW Program and technologies database. (U) \$ 2.657 Evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various NL technologies and munitions. (U) \$ 0.698 Modeling and simulation of NLWs in the Joint Conflict and Tactical Simulation (JCATS) model and performance effects data collection and to initiate capability set M&S efforts. (U) \$ 0.446 Continue pursuit of new technology through open competition of industry, academia and government lab sources for NL capabilities. (U) \$ 0.483 Objective Individual Combat Weapons (OICW) – Initial development of NL munitions for the “next generation” combat weapon that will replace selected M16 Rifles, M4 Carbines and M203 Grenade Launchers. (U) \$ 1.225 Program Support for each service’s oversight and administration of the Joint NLW Program. (U) \$ 0.752 NL Mortar – Continue to explore and evaluate a NL mortar demonstrator with a frangible/combustible casing and drag reduction devices. (U) \$ 0.344 Mk19 NL Munition - Initial development of a NL munition for the 40mm Mk19 Grenade machine gun. (U) \$ 1.087 Continue the non-lethal technology innovation initiative to allow pursuit of new NL materials and technologies. (U) \$ 10.800 Active Denial System (ADS) - Continue evaluation, testing and target assessment of a HMMWV mounted directed energy system. (U) \$ 0.779 Clear Space Device - Initial exploration and evaluation of this CEP down-select on grenade and payload component advanced development (U) \$ 0.161 Running Gear Entanglement System (RGES) - Complete evaluation of several prop entanglement capabilities. (U) \$ 1.021 Slippery Substances - Continue evaluation, analysis and testing of slippery foams and delivery methods/volumes. (U) \$ 4.109 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. (U) \$ 4.100 Concept Exploration Program – Continue to explore and evaluate technical NL solutions to incapacitate personnel, crowd control, area denial to personnel, vehicles and boats. (U) \$ 0.430 Joint Integration Program (JIP) – Continue to select and test commercial products that will meet the Joint Services’ requirement for specific NL capability set common items. (U) \$ 0.800 Conduct and evaluate concepts of employment for current and emerging NL technologies for operational utility within the naval force protection mission. (U) \$ 0.400 Conduct a study to determine the operational parameters for NLWs beyond small arms range. (U) \$ 3.173 Pulsed Energy Projectile (PEP) – Explore the development of laser hardware and characterization of target effects. 		
(U) Total \$	35.095	
(U) FY 2003 Planned Program:		
<ul style="list-style-type: none"> (U) \$ 1.349 Execution oversight and administration of the Joint NLW Program and technologies database. (U) \$ 2.000 Evaluation of NLWs by Service warfighting laboratories for direct user feedback of various NL technologies and munitions. (U) \$ 1.080 Modeling and simulation of NLW in the JCATS model and performance effects data collection and to continue capability sets M&S efforts. (U) \$ 0.540 Continue pursuit of new technology through open competition of industry, academia and government lab sources for NL capabilities. (U) \$ 0.432 Objective Individual Combat Weapons (OICW) – Continue development of NL munitions for the “next generation” combat weapon that will replace selected M16 Rifles, M4 Carbines and M203 Grenade Launchers. (U) \$ 1.102 Program Support for each service’s oversight and administration of the Joint NLW Program. (U) \$ 0.864 NL Mortars - Continue evaluation of NL mortar demonstrator with a frangible/combustible casing and drag reduction devices. (U) \$ 5.886 Active Denial System (ADS) - Continue evaluation, testing and target assessment of a HMMWV mounted directed energy system. (U) \$ 0.906 Mk19 NL Munition - Continue development of a NL munition for the 40mm Mk19 Grenade machine gun. (U) \$ 1.113 Clear Space Device - Continue to explore and evaluate grenade and payload component advanced development. (U) \$ 1.080 Slippery Substances - Continue evaluation and testing of slippery foams and delivery methods/volumes. 		

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME					
RDT&E, N /BA-4 Demonstration/Validation		0603851M Non-Lethal Warfare DEM/VAL			C2319 Non-Lethal Weapons Program					
• (U) \$ 1.900 Studies and Analysis – Medical and NL casualty data collection; strategic planning; human effects assessments; and technical studies/analysis of emerging technologies for possible NL application.										
• (U) \$ 3.240 Concept Exploration Program – Continue to explore and develop technical NL solutions for area denial to vehicles, crowd control, disable equipment, and to incapacitate personnel.										
• (U) \$ 0.430 Joint Integration Program (JIP) – Continue to select and test commercial products that will meet Joint Services’ requirement for specific NL capability set common items.										
• (U) \$ 2.160 Pulsed Energy Projectile (PEP) -- Continue refinement of bio-effects characterization and optimization of lasers.										
(U)Total \$ 24.082										
		FY2001	FY2002	FY2003						
(U) FY 2002 President's Budget:		29.309	34.008							
(U) Adjustments from the President's Budget:										
(U) SBIR/STTR Transfer		-0.426								
(U) Execution Adjustment										
(U) Minor Affordability Adjustment			-0.313							
(U) Program Adjustment		-0.768	1.400							
(U) FY 2003 President's Budget:		28.115	35.095	24.082						
CHANGE SUMMARY EXPLANATION:										
(U) Funding: See Above.										
(U) Schedule: Not Applicable.										
(U) Technical: Not Applicable.										
(U) B. OTHER PROGRAM FUNDING SUMMARY:										
Line Item No. & Name		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007 To Compl	Total Cost	
(U) PAN,MC BLI 162800, Non-Lethal Munitions		4.446	4.461	5.642	3.833	3.849	3.938	3.463	Continuing	Continuing
(U) PMC BLI 237100, Operations Other Than War		1.335	1.532	1.531	1.377	1.546	1.574	1.603	Continuing	Continuing
(U) Related RDT&E: Not Applicable.										
(U) C. ACQUISITION STRATEGY: *										
The JNLWP strategy is to continue to pursue the fielding of NLW systems through modifying 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) D. SCHEDULE PROFILE: Not Applicable.										

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CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation			PROGRAM ELEMENT 0603851M Non-Lethal Warfare DEM/VAL			PROJECT NUMBER AND NAME C2319 Non-Lethal Weapons Program						
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Dev											0.000	
Ancillary Hardware Dev											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Product Development	MIPR	USAIC, Ft. Benning, GA	2.693	0.306		0.400		0.000		Continuing	Continuing	
Product Development	MIPR	SMDC, Huntsville, AL	0.000	1.400		1.500		1.500		Continuing	Continuing	
Product Development	MIPR	ARDEC, Picatinny, NJ	38.944	6.097		4.444		3.805		Continuing	Continuing	
Product Development	WR	NSWC, Various	6.689	3.472		1.826		0.540		Continuing	Continuing	
Product Development	MIPR	Kirtland AFB, NM	14.743	4.536		12.170		6.480		Continuing	Continuing	
Product Development	MIPR	JWCF, Ft. Monroe, VA	0.550	0.219		0.757		0.552		Continuing	Continuing	
Product Development	WR/RCP	MCSC, Quantico,VA	5.199	6.150		4.432		3.273		Continuing	Continuing	
Product Development	MIPR	NSMA,Arlington, VA	1.022	0.987		3.352		2.160		Continuing	Continuing	
Product Development	RCP	MCLB, Albany,GA	0.250	0.300	05/01	0.300	01/02	0.300		Continuing	Continuing	
Product Development	MIPR	Various (M&S)	0.202	0.591		0.698		1.080		Continuing	Continuing	
Product Development	MIPR	Various (TIP)	2.590	1.080		0.446		0.540		Continuing	Continuing	
Product Development	MIPR	Various (Service)	5.671	0.846		2.710		2.125		Continuing	Continuing	
Subtotal Product Dev			78.553	25.984		33.035		22.355		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation			PROGRAM ELEMENT 0603851M Non-Lethal Warfare DEM/VAL			PROJECT NUMBER AND NAME C2319 Non-Lethal Weapons Program						
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support Equip											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Support Cost	WR	MCSC, Quantico, VA	1.957	0.752		0.430		0.432		Continuing	Continuing	
Support Cost	WR	NSWC, Dahlgren, VA	1.265	0.218		0.370		0.370		Continuing	Continuing	
Support Cost	RCP	CTQMSC, Quantico, VA	4.485	0.500	12/00	0.540	12/01	0.440		Continuing	Continuing	
Support Cost	Various	Various	2.957	0.661		0.720		0.485		Continuing	Continuing	
Subtotal Support			10.664	2.131		2.060		1.727		Continuing	Continuing	
Remarks:												
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Eval											0.000	
Operational Test & Eval											0.000	
Tooling											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4 Demonstration/Validation			PROGRAM ELEMENT 0603851M Non-Lethal Warfare DEM/VAL			PROJECT NUMBER AND NAME C2319 Non-Lethal Weapons Program						
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Contractor Eng Suppt											0.000	
Govt Engineering Suppt											0.000	
Program Mngmnt Suppt											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost				28.115		35.095		24.082		Continuing	Continuing	

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2691 Joint Combat Identification Evaluation Team (JCIET) (Formally All Service Combat Identification Evaluation Team (ASCIET))	12,654	13,410	14,414	17,081	15,403	15,953	17,056	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Combat Identification Evaluation Team's (JCIET) primary mission is to employ the equipment and personnel of all four Services to evaluate, investigate, and assess joint integration and interoperability of systems, concepts, capabilities, Tactics, Techniques and Procedures (TTP), and doctrine which directly affect Combat Identification (CID) within the present and future joint battle space. In addition to its primary mission, JCIET fulfills a number of collateral missions. JCIET offers Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in a joint environment on a not-to-interfere basis for risk reduction and verification. JCIET remains the primary venue for experimentation in areas of system integration and interoperability related to joint and allied combat ID and battlefield information management. In addition, JCIET coordinates with the U.S. Joint Forces Command staff to maximize use of the JCIET venue by other joint activities such as the Joint Battle Center (JBC), Joint Futures Lab (JFL), the Single Integrated Air Picture (SIAP) System Engineer (SE) initiative and Joint Test and Evaluation (JT&E) programs. JCIET is U.S. Joint Forces Command's lead for evaluation of CID in the joint, allied and coalition arena.

In July 2000, DCINC USJFCOM directed ASCIET to change the evaluation cycle from 12 to 18-months in an effort to reduce OPSTEMPO/PERSTEMO for the component commands. On 24 Oct 2000, CINC USJFCOM approved re-designation of ASCIET to JCIET (Joint Combat Identification Evaluation Team). In December 2000, CINC USJFCOM directed JCIET to change the evaluation from an 18-month to a 24-month cycle. The outcomes of this schedule change have caused current FYDP funding misalignment with execution year requirements.

A. (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 help expedite technologies that meet joint warfighters' needs.

R-1 Shopping List – Item No 88-1 of 88-8
UNCLASSIFIED

Exhibit R-2, Budget Item Justification

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

B. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 Accomplishments:

- (U) (\$4,175) Evaluation Support. JCIET continued to develop/improve instrumentation/data collection systems to meet evaluation objectives, improvement of instrumentation capabilities of new Army and Allied vehicles, aircraft and SHORAD (Short Range Air Defense) equipment, as well as plan and build support structure for the JCIET debriefing network. Instrumentation provides time, space, position information and shot pairing for real time casualty assessment, and subsequent kill removal analysis. Results from the instrumentation pointed to solutions to combat ID deficiencies. Contractor Support was required for instrumentation installation and checkout and to ensure instrumentation is reliable and accurate. Opposing Forces (OPFOR) Equipment configuration and safety modifications were made to ground maneuver vehicles and instrumentation adaptation for proper performance during the next evaluation. Site visits to prepare for the next evaluation were conducted as necessary.
- (U) (\$1,443) JCIET Support. JCIET actively participated in numerous Joint exercise planning events, exercises, and after action reviews. These events included Millennium Challenge, Joint Task Force Exercises (JTFX), Red Flag, Roving Sands, and Amalgam Virgo. JCIET supported the integration of three DoD-sponsored JT&E testing objectives into the 2002 evaluation to include Joint Cruise Missile Defense (JCMD), Joint Command and Control Intelligence Surveillance and Reconnaissance (JC2ISR), and Joint Close Air Support (JCAS) as well as the SIAP-SE. All of these events require detailed planning to integrate and support desired objectives. Under tasking from USJFCOM J-8, JCIET conducted a Mode IV/5 vulnerability study and the development of new TTP to be evaluated during the next JCIET Evaluation. JCIET is a tenant unit at Eglin AFB requiring base support, which includes, utilities, waste disposal, cleaning, civil engineering, communications, and printing contracts. JCIET continued to maintain and upgrade analytical capabilities with needed software and hardware improvements. JCIET required contracted administrative support. The following major documents were published from results of the JCIET 2000 Evaluation: 45-day Quick Look Report and a Final Report. Quick Look and Final results briefings were prepared and presented to the Joint Staff, the Services, and the Commanders-in-Chief (CINCs).
- (U) (\$6,736) Annual Support Contracts. Preparations were made to develop the 2002 Evaluation scenario to mirror real world joint combat operations. Participant command and control systems, data tactical displays, voice and data link communications, identification systems and data engagement decisions were thoroughly analyzed to determine causes of fratricide and assist in developing solutions. Overall combat effectiveness to include exchange ratios, lost shot opportunities and missed targets were also evaluated and analyzed. JCIET's focus was on tactics, techniques and procedures (TTP), joint interoperability, and combat systems. A white force (evaluation control) network was designed and constructed to meet JCIET 2002 scenario requirements. A classified debriefing network was designed and constructed in preparation for the 2002 Evaluation to allow participants at different geographical locations, including ships at sea, to debrief the

R-1 Shopping List – Item No 88-2 of 88-8
UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

daily missions. This debriefing process allows participants the opportunity to discover, learn and adjust TTP and systems performance for the subsequent mission.

- (U) (\$300) Conferences. JCIET hosted three planning conferences in preparation for the 2002 Evaluation: Airspace, Off-Site Planning, and Initial Planning. Through these planning conferences, warfighter participants are an integral part of the planning process including scenario development and preparation for interoperability between the services.

1. (U) FY 2002 Plan:

- (U) (\$4,101) Evaluation Support. The JCIET Evaluation will be conducted at Eglin AFB FL, Gulfport MS Combat Readiness Training Center (CRTC), and Camp Shelby MS. The Evaluation will provide a realistic, joint task force combat scenario in a littoral battlespace. JCIET's air defense and air-to-surface operations will require full instrumentation of a ground maneuver mounted and dismounted element, an opposing force (OPFOR), and airborne platforms. Air defense platforms including aircraft, ships at sea, and land-based assets will be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real time casualty assessment and kill removal for post-mission and post-evaluation analysis. Results from the instrumentation will point to solutions to combat ID deficiencies. Contractor support will be required for instrumentation installation and checkout to ensure instrumentation is reliable and accurate. OPFOR vehicles and air defense systems will be actual Former Soviet Union (FSU) equipment and will be leased and transported from home base to the evaluation location. JCIET will fund travel, billeting and per diem for 4,500 participants consisting of service warfighters and augmentees for Distinguished Visitors (DV), security, weapons systems expertise, and airspace support from the Federal Aviation Administration (FAA). Site visits required to prepare for the evaluation will be conducted as necessary.
- (U) (\$1,200) JCIET Support. JCIET is a tenant at Eglin AFB requiring base support that includes utilities, waste disposal, cleaning, civil engineering, communications, and printing contracts. JCIET will continue to maintain and upgrade analytical capabilities with needed software and hardware improvements. JCIET will require contracted administrative support. The following major documents will be published in 2002: Evaluation Spin-up Plan and Evaluation Plan. The JCIET staff will provide technical and operational support to forums dealing with combat ID issues e.g., the Joint Integrated Air Defense Interoperability Working Group and the World Wide Combat ID conference, and SIAP-SE.
- (U) (\$7,809) Annual Support Contracts. The JCIET Evaluation scenario will be developed to mirror real world joint combat operations. Participant command and control systems, data tactical displays, voice and data link communications, identification systems and data engagement decisions will be thoroughly analyzed to determine causes of fratricide and assist in developing solutions. Overall combat effectiveness to include exchange ratios, lost shot opportunities and missed targets

R-1 Shopping List – Item No 88-3 of 88-8
UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

will also be evaluated and analyzed. JCIET's focus will be on tactics, techniques and procedures (TTP), interoperability and combat systems. A white force (evaluation control) network will be designed and constructed to meet JCIET scenario requirements. A classified debriefing network will also be designed and constructed to allow participants at different geographical locations, including ships at sea, to debrief the daily missions. This debriefing process will allow participants the opportunity to discover, learn and adjust TTP and systems performance for the subsequent mission.

- (U) (\$300) Conferences. JCIET will host planning conferences to include Airspace, OPFOR, Mid-Planning and Final Planning. Through these planning conferences, warfighter participants will be an integral part of the planning process including scenario development and preparation for interoperability between the services.

2. (U) FY 2003 Plan:

- (\$4,546) Evaluation Support. JCIET's expanded surface-to-surface and air-to-surface operation will continue to require full instrumentation of a battalion size task force, an opposing force (OPFOR), and airborne platforms. Air defense platforms including aircraft, ships at sea and land based assets will be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real time casualty assessment, and kill removal subsequent analysis. Results from the instrumentation will point to solutions to combat ID deficiencies. Contractor support will be required for instrumentation installation and checkout and to ensure instrumentation is reliable and accurate. OPFOR vehicles and air defense systems will be real Former Soviet Union equipment and will be leased and transported from their home base to the evaluation location. JCIET will fund travel, billeting and per diem for participants consisting of service warfighters and augmentees for security, weapons systems expertise and airspace support (FAA). Site visits required to prepare for the evaluation will be conducted as necessary.
- (U) (\$1,200) JCIET Support. JCIET will remain a tenant at Eglin AFB requiring base support including utilities, waste disposal and cleaning contracts. JCIET will maintain and upgrade analytical capabilities with needed software and hardware improvements. The following major documents will be published from the JCIET 2002 Evaluation: 45-day Quick Look Report, and the Final Report. Quick Look and Final results briefings will be prepared and presented to the Joint Staff, the Services and the Commanders-in-Chief (CINCs). The JCIET staff will provide technical and operational support to forums dealing with combat ID issues e.g., the Joint Integrated Air Defense Interoperability Working Group and the World Wide Combat ID conference. Support USJFCOM Joint Interoperability and Integration (JI&I) objectives as directed by DCINC to include level II training events and exercises.
- (U) (\$8,368) Annual Support Contracts. The JCIET 2004 evaluation scenario will be developed to mirror real world joint combat operations. Participant command and control systems, data tactical

R-1 Shopping List – Item No 88-4 of 88-8
UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

displays, voice and data link communications, identification systems and data engagement decisions will be thoroughly analyzed to determine causes of fratricide and assist in developing solutions. Overall combat effectiveness to include exchange ratios, lost shot opportunities and missed targets will also be evaluated and analyzed. JCIET's focus will be on tactics, techniques and procedures (TTP), interoperability and combat systems. A white force (evaluation control) network will be designed and constructed to meet JCIET scenario requirements. A classified debriefing network will also be designed and constructed to allow participants at different geographical locations, including ships at sea, to debrief the daily missions. This debriefing process will allow participants the opportunity to discover, learn and adjust TTP and systems performance for the subsequent mission.

- (U) (\$300) Conferences. JCIET will host planning conferences to include: Airspace, OPFOR, and Initial Planning. Through these planning conferences, warfighter participants will be an integral part of the planning process including scenario development and preparation for interoperability between the services.

C. (U) PROGRAM CHANGE SUMMARY: Moved JCIET from the Joint Staff to CINC USJFCOM and JCIET's RDT&E funding to the Department of Navy effective FY 00.

FY 2001: Section 8086: 0.7% Pro-Rata Reduction (-\$92K), Government-Wide Rescission PL 106-554 (-\$29K), SBIR Assessment (-\$335K).

FY 2002: Section 8123: Management Reform Initiative (-\$120K)

D. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

FY 2000 ACTUAL	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) Procurement		*	*				
(U) O&M		*	*				

Note: *O&M and procurement funds remain funded by the Air Force (Air Combat Command) and did not shift to the Navy for executive agency.

E. (U) ACQUISITION STRATEGY

FY 2001-03.

UNCLASSIFIED
EXHIBIT R-2, FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N

PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691

PROJECT TITLE: JCIET

Competitive contract was awarded to SAIC in January 01, and MEVATEC in February 01. Both contracts were let on a GSA schedule for JCIET technical and test support, under the Advisory and Assistance Support (A&AS) approval process. JCIET is currently working follow-on to these contracts. One Class Type Justification and Authority (J&A) task order contract awarded to SRI in August 00, for JCIET Deployable Force-On-Force Instrumented Range System (DFIRST) concept development. Authorize several sole source contracts for short periods to support evaluation conduct including Opposing Force (OPFOR) fighter type aircraft, Graphic Information Systems (GIS) support services, video conferencing, new technology software application, vehicle instrumentation packaging for data collection, and evaluation operational logistical support.

F. (U) SCHEDULE PROFILE: Not Applicable

UNCLASSIFIED
EXHIBIT R-3, FY 2003 RDT&E,N PROJECT COST ANALYSIS

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

Exhibit R-3 Cost Analysis (page 1)									Date: February 2002			
APPROPRIATION/BUDGET ACTIVITY 1319/BA 4				PROGRAM ELEMENT: 0603857N					PROJECT NAME AND NUMBER: JCIET/X2691			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation	C/FP PO	SAIC Eglin AFB	4214	4492	01/01	5395	02/02	5550	02/03	Cont	Cont	Cont
Operational Test & Evaluation	SS/CPFF MIPR	Stanford Research Inst., Menlo Park CA	1575	667	04/01	615	02/02	1300	11/02	Cont	Cont	Cont
Operational Test & Evaluation	SS/FP PO	MEVATEC Eglin AFB	1914	2244	02/01	2414	03/02	2818	03/03	Cont	Cont	Cont
Evaluation Other Costs	MIPR/ PO	FY00 Savannah FY01 Gulf Port Camp Shelby MS	4209	3258	Various	3086		2846		Cont	Cont	Cont
Travel and Conference		JCIET/Various	735	700		700		700		Cont	Cont	Cont
Operation Costs/Research		JCIET/Various	1251	1293		1200		1200		Cont	Cont	Cont
Subtotal T&E			13898	12654		13410		14414		Cont	Cont	Cont
Remarks:												
Subtotal Support												
Remarks												

UNCLASSIFIED
EXHIBIT R-3, FY 2003 RDT&E,N PROJECT COST ANALYSIS

DATE: February 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603857N
PROGRAM ELEMENT TITLE: All Service Combat Identification Evaluation Team

PROJECT NUMBER: X2691
PROJECT TITLE: JCIET

Exhibit R-3 Cost Analysis (page 2)									Date: February 2002			
APPROPRIATION/BUDGET ACTIVITY: 1319/BA 4			PROGRAM ELEMENT: 0603857N						PROJECT NAME AND NUMBER: JCIET/X2691			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY01 Cost	FY01 Award Date	FY02 Cost	FY02 Award Date	FY03 Cost	FY03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal T&E												
Remarks												
Subtotal Management												
Remarks												
Total Cost			13898	12654		13410		14414		Cont	Cont	Cont
Remarks												

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603860N, Joint Precision Approach and Landing System					
COST (\$ in Millions)	Prior Year Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Total PE Cost	2.825			1.500	11.932	30.645	41.500	19.467	21.091	627.259	756.219
W2329 JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)	2.825			* 1.500	11.932	30.645	41.500	19.467	21.091	627.259	756.219
Quantity of RDT&E Articles					1	2				23	26
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element provides for the development, integration, and testing of JPALS on Navy, Marine Corps, and Coast Guard aircraft, ships, and ground stations. JPALS will allow equipped aircraft to land on any suitable surface world wide (land and sea), while minimizing impacts to aircraft recovery operations due to low ceiling or visibility. The JPALS program was established in response to the Joint Mission Need Statement (MNS) for Precision Approach and Landing Capability (PALC), which was approved by the Chief of Naval Operations on 28 July 94 and the Chief of Staff of the Air Force on 8 August 94. The PALC MNS was validated by the Joint Requirements Oversight Council on 29 August 95. Army Joint Service participation was included in the 28 May 96 Principal Deputy Under Secretary of Defense (Acquisition and Technology) Milestone 0 Acquisition Decision Memorandum (ADM) which also designated the Air Force as the lead Service. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night, survivable, and mobile precision approach and landing capability. Operating environments include fixed base, tactical, shipboard and special mission. Military and civil interoperability is required. The funds cited above will provide for completion of the JPALS Shipboard architecture and development of equipment satisfying the unique requirements for the data link and GPS user equipment which will support the high accuracy, integrity, availability, and continuity needed for JPALS to work in a shipboard environment. The program is funded under a special OSD dispensation for pre-milestone architecture and requirements definition.</p> <p>(U) B. JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION (Component Advanced Development) because it develops and integrates hardware for experimental test related to specific ship or aircraft applications.</p>											
* FY 2002 is funded through a Congressional add.											

R-1 SHOPPING LIST - Item No. 089

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, Page 1 of 8)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603860N, Joint Precision Approach and Landing System				PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System					
COST (\$ in Millions)	Prior Years Cost		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Program
Project Cost	2.825		0.000	1.500	11.932	30.645	41.500	19.467	21.091	627.259	756.219
RDT&E Articles Qty					1	2				23	26
<p>(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the development, integration, and testing of JPALS on Navy, Marine Corps, and Coast Guard aircraft, ships, and ground stations. JPALS will allow equipped aircraft to land on any suitable surface world wide (land and sea), while minimizing impacts to aircraft recovery operations due to low ceiling and/or visibility. The JPALS program was established in response to the Joint Mission Need Statement (MNS) for Precision Approach and Landing Capability (PALC), which was approved by the Chief of Naval Operations on 28 July 94 and the Chief of Staff of the Air Force on 8 August 94. The PALC MNS was validated by the Joint Requirements Oversight Council on 29 August 95. Army Joint Service participation was included in the 28 May 96 Principal Deputy Under Secretary of Defense (Acquisition and Technology) Milestone 0 Acquisition Decision Memorandum (ADM) which also designated the Air Force as the lead Service. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night, survivable, and mobile precision approach and landing capability. Operating environments include fixed base, tactical, shipboard and special mission. Military and civil interoperability is required.</p> <p>(U) PROGRAM ACCOMPLISHMENTS AND PLANS:</p> <p>1. FY 2001 ACCOMPLISHMENTS: Not applicable</p>											

R-1 SHOPPING LIST - Item No. 089

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, Page 2 of 8)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603860N, Joint Precision Approach and Landing System	W2329, Joint Precision Approach and Landing System
<p>2. FY 2002 PLANS:</p> <p>(U) (1.200) Complete UCAV demonstrations. (U) (.300) Perform limited systems integration.</p> <p>3. FY 2003 PLANS:</p> <p>(U) (2.921) Complete shipboard system architecture (U) (1.293) Continue development of anti jam technologies (U) (0.940) Continue development of data link (U) (0.895) Continue development of shipboard integration (U) (1.282) Complete avionics architecture (U) (2.444) Complete aircraft integration architecture (U) (2.157) Continue technical maturation and testing</p>		

R-1 SHOPPING LIST - Item No.

089

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2002																																					
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603860N, Joint Precision Approach and Landing System		PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System																																					
<p>(U) B. PROGRAM CHANGE SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th><u>FY2001</u></th> <th><u>FY2002</u></th> <th><u>FY2003</u></th> </tr> </thead> <tbody> <tr> <td>(U) FY 2002 President's Budget:</td> <td></td> <td>0.000</td> <td></td> </tr> <tr> <td>(U) Adjustments from the President's Budget:</td> <td></td> <td>1.500</td> <td></td> </tr> <tr> <td>(U) FY 2003 President's Budget Submit:</td> <td></td> <td>1.500</td> <td>11.932</td> </tr> </tbody> </table> <p>CHANGE SUMMARY EXPLANATION:</p> <p>(U) Funding: The FY 2002 increase of \$1.500 million is due to a Congressional add. Navy JPALS R&D requirements were funded in PE 0603860F during FY1999 through FY2001. Funding is started in FY2002 to reestablish the program in the Navy PE to fund Navy unique requirements.</p> <p>(U) Schedule: Not applicable.</p> <p>(U) Technical: Not applicable.</p> <p>(U) C. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th><u>FY2001</u></th> <th><u>FY2002</u></th> <th><u>FY2003</u></th> <th><u>FY2004</u></th> <th><u>FY2005</u></th> <th><u>FY2006</u></th> <th><u>FY2007</u></th> <th><u>To Complete</u></th> </tr> </thead> <tbody> <tr> <td>(U) PE 0603860F (JPALS) (Navy share of costs shown)</td> <td>9.022</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> </tbody> </table>									<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	(U) FY 2002 President's Budget:		0.000		(U) Adjustments from the President's Budget:		1.500		(U) FY 2003 President's Budget Submit:		1.500	11.932		<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>	<u>To Complete</u>	(U) PE 0603860F (JPALS) (Navy share of costs shown)	9.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>																																						
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(U) PE 0603860F (JPALS) (Navy share of costs shown)	9.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																	

R-1 SHOPPING LIST - Item No. 089

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, Page 4 of 8)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603860N, Joint Precision Approach and Landing System	PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System																
<p>(U) D. ACQUISITION STRATEGY: Navy JPALS will be developed with government owned or non-proprietary algorithms to an open system architecture. JPALS avionics will be modifications only to existing aircraft systems procured from existing prime contracts. Shipboard JPALS equipment will be competitively procured. Shore based JPALS units will be developed by the Air Force to meet the requirements of all the Services.</p>																		
<p>(U) E. SCHEDULE PROFILE:</p> <table border="0"> <thead> <tr> <th></th> <th><u>FY 2001*</u></th> <th><u>FY 2002</u></th> <th><u>FY 2003</u></th> <th><u>TO COMPLETE</u></th> </tr> </thead> <tbody> <tr> <td>(U) Program Milestones</td> <td></td> <td></td> <td></td> <td>4Q/04 MS B 4Q/10 MS C</td> </tr> <tr> <td>(U) Engineering Milestones</td> <td>3Q Development of demo system for sea trials 4Q Development of demonstration system for anti jam trials</td> <td></td> <td>3Q Integration of anti jam system into light aircraft for sea trials 4Q Completion of architecture development</td> <td>3Q/10 Integration into shore sites</td> </tr> </tbody> </table>					<u>FY 2001*</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>	(U) Program Milestones				4Q/04 MS B 4Q/10 MS C	(U) Engineering Milestones	3Q Development of demo system for sea trials 4Q Development of demonstration system for anti jam trials		3Q Integration of anti jam system into light aircraft for sea trials 4Q Completion of architecture development	3Q/10 Integration into shore sites
	<u>FY 2001*</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>TO COMPLETE</u>														
(U) Program Milestones				4Q/04 MS B 4Q/10 MS C														
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R-1 SHOPPING LIST - Item No. 089

* Efforts funded under USAF PE 0603860F.

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, Page 5 of 8)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:
			February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603860N, Joint Precision Approach and Landing System	W2329, Joint Precision Approach and Landing System	
(U) E. SCHEDULE PROFILE CONTINUED:			
	<u>FY 2001*</u>	<u>FY 2002</u>	<u>FY 2003</u>
			<u>TO COMPLETE</u>
(U) T&E Milestones	3Q Successful completion of shipboard autolandings in F/A-18A	3Q Successful completion of antijam testing in light aircraft at ship	4Q/07 Successful DT-I of initial JPALS avionics
	4Q Successful completion of anti-jam testing ashore.	4Q Successful completion of antijam testing in SH-60 at ship	2Q/10 Successful DT-I of CV JPALS
			3Q/10 Successful DT-I on second set of JPALS avioinics
			4Q/10 Successful DT-II of CV JPALS and initial avionics
			1Q/08 Award of initial contracts for development and integration into ships and aircraft.
(U) Contract Milestones			1Q/11 LRIP contract award

R-1 SHOPPING LIST - Item No. 089

* Efforts funded under USAF PE 0603860F.

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, Page 6 of 8)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603860N, Joint Precision Approach and Landing System			W2329, Joint Precision Approach and Landing System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SRGPS Architecture Development	WR	NAWCAD Pax River MD	2.803					2.823	11/02		5.626	
SRGPS Anti-Jam Development	WR	NAWCAD Pax River MD						1.249	11/02	22.748	23.997	
SRGPS Data Link Development	WR	NAWCAD Pax River MD						0.908	11/02	21.000	21.908	
Ship Integration	WR	NAWCAD Pax River MD						0.865	11/02	26.854	27.719	
Avionics Architecture Development	WR	NAWCAD Pax River MD						1.238	11/02		1.238	
Aircraft Integration Architecture	WR	NAWCAD Pax River MD				0.275	01/02	2.362	11/02		2.637	
Other	Various	Various								594.004	594.004	
Subtotal Product Development			2.803			0.275		9.445		664.606	677.129	
Remarks: FY 1999-2001 efforts were funded under PE 0603860F.												
Subtotal Support												
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: February 2002						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603860N, Joint Precision Approach and Landing System			W2329, Joint Precision Approach and Landing System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
UCAV Demonstration	WR	NAWCAD Pax River MD				1.125	01/02				1.125	
Developmental Test & Evaluation	WR	NAWCAD Pax River MD						2.084	11/02	51.519	53.603	
Subtotal T&E						1.125		2.084		51.519	54.728	
Remarks:												
Program Management Support	Various	NAVAIR & NAWCAD	0.022			0.100	01/02	0.403	11/02	24.688	25.213	
Subtotal Management			0.022			0.100		0.403		24.688	25.213	
Remarks:												
Total Cost			2.825			1.500		11.932		740.813	757.070	
Remarks:												

R-1 SHOPPING LIST - Item No. 089

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: FEBRUARY 2002			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4					R-1 ITEM NOMENCLATURE 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG					
COST (\$ in Millions)		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2006	Cost to Complete	Total Cost
Total PE Cost		3.496	42.727	73.966	TBD	TBD	TBD	TBD	TBD	TBD
<p>A. (U) Mission Description and Budget Item Justification</p> <p>A Single Integrated Air Picture (SIAP) is the product of fused, near-real-time and real-time data from multiple sensors to allow development of common, continuous, and unambiguous tracks of all airborne objects in the surveillance area. All airborne objects must be detected, tracked, and reported. Each object must have one and only one track identifier and associated characteristics to be incorporated into a single combat identification process. Current systems do not provide this capability. The SIAP System Engineering (SE) Task Force was approved by the Joint Requirements Oversight Council (JROC) in March 2000, and chartered in Oct 2000 by the Under Secretary of Defense to perform "the system engineering needed to fix problems in the existing Joint Data Network (JDN) and to guide development toward a future SIAP capability." This PE is funded by all the services and controlled by SIAP Acquisition Executive.</p> <p>The SIAP Task Force will develop the tools and processes and perform the system engineering that will identify cost effective fixes to Tactical data link systems. The resulting prioritized list of fixes will be addressed in incremental blocks designed to improve the SIAP. Each Block will identify specific changes to be implemented in specific systems to improve the Joint Theater Air and Missile Defense Family of Systems SIAP capability. These changes will identify the engineering specifications, supporting rationale (test results and analysis), and acquisition estimate expected to implement the changes. Once approved by the JROC, implementation of these recommended changes is the responsibility of the affected Service programs.</p> <ul style="list-style-type: none"> • Block 0 addressed four joint warfighting shortfalls selected for their impact on the JDN, their applicability across the Services, and the engineering maturity reflected by interface change proposals already on-record with the Joint Interoperability for Tactical Command and Control system process. The change proposals that will be addressed were: improved correlation/decorrelation, formation tracking/correlation, identification taxonomy and symbology, and an ID conflict resolution matrix. • Block 1 is addressing a set of JDN deficiencies approved by United States Joint Forces Command to provide the greatest operational benefit to the warfighter which can be implemented in the near- to mid-term. The issues being addressed are: further reduction of dual tracks, improved combat ID capability, improved data sharing (network capacity), and improved contribution of the air picture to theater ballistic missile defense performance. 										

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification
 (Exhibit R-2, page 1 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification

DATE:

FEBRUARY 2002

APPROPRIATION/BUDGET ACTIVITY

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4

R-1 ITEM NOMENCLATURE

0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG**A. (u) Mission Description and Budget item justification (cont.)****SIAP RDT&E Budget (\$M)**

		FY01	FY02	FY 03
Block 0				
	Reqs Analysis	\$0.481	\$0.280	
	Functional Analysis	\$0.540	\$0.460	
	Acquisition Assessment	\$0.210	\$0.110	
	SIAP Architecture	\$0.350	\$0.120	
	Program Mgt	\$0.639	\$0.100	
	Engineering Controls	\$0.566	\$0.450	
	Total	\$2.786	\$1.520	
Block 1				
	Reqs Analysis	\$0.250	\$3.730	
	Functional Analysis	\$0.120	\$15.692	
	Acquisition Assessment	\$0.000	\$3.225	
	SIAP Architecture	\$0.050	\$6.960	
	Program Mgt	\$0.210	\$8.750	
	Engineering Controls	\$0.080	\$2.850	
	Total	\$0.710	\$41.207	
	Block 0			\$ 1.300
	Block 1			\$ 37.366
	Block 2			\$ 10.300
	Architecture			\$ 8.300
	Tools & Analysis			\$ 4.800
	Validation and Certification			\$ 7.000
	Program Mgt			\$ 4.900
	Total	\$ 3.496	\$ 42.727	\$ 73.966

PROGRAM ACCOMPLISHMENTS AND PLANS:**R-1 SHOPPING LIST - Item No. 90**

- Delivered Block 0 recommendations to improve single integrated air picture performance, JROC approved the recommendations, and funding to implement the recommendations was approved
- Developed method to measure SIAP performance against requirements (measures of performance, measures of effectiveness)
- Developed first operational context (reference scenario) to measure SIAP performance against
- Initial framework of SIAP architecture developed
- Develop initial set of recommended solutions to address Block 1 issues and present to JROC
- Incorporate capabilities of warfighting systems into architecture

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 2 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification				DATE:	FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY			R-1 ITEM NOMENCLATURE		
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4			0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG		
B. (U) Program Change Summary: (\$ in Millions)					
	FY 2001	FY 2002	FY 2003		
(U) FY 2002 President's Budget:	20.000	43.140			
(U) Appropriated Value:	3.496	43.140			
(U) Adjustments to FY 2001/2002					
Appropriated Value/FY 2002					
President's Budget:	-16.504	-0.413			
(U) FY 2003 Pres Budget Submit:	3.496	42.727	73.966		
(U) Change Summary Explanation: FY 01: Reduction of (-.451) is a program adjustment. and Above Threshold Reprogramming not approved. (-\$16.053). FY02: (-0.381M) due to Section 8123 Management Reform Initiative. (-0.032) is a minor pricing adjustment.					
(U) Schedule: N/A					
(U) Technical: N/A					
C. (U) Other Program Funding Summary: N/A					
(U) Related RDT&E,N: N/A					
D. (U) Acquisition Strategy: N/A					
E. (U) Schedule Profile: N/A					

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification

(Exhibit R-2, page 3 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4		R-1 ITEM NOMENCLATURE 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG
<p>1. (U) FY2001 Accomplishments: This effort recommended Joint Data Network fixes to improve the JTAMD Fos SIAP performance and laid the groundwork for engineering concepts needed to support the 2010 Integrated Architecture.</p> <p> -(\$2.786M) Developed the Block 0 Improvement Plan and delivered it to the JROC ahead of schedule in Aug. This plan identified specific changes to be implemented in specific systems to improve the JTAMD FoS SIAP capability. This plan was approved by the JROC and DoD approved funding to implement the recommendations beginning in FY03.</p> <p> --Developed a set of initial operational, technical and performance Measures of Effectiveness/Measures of Performance that objectively assess SIAP capacity and capability.</p> <p> --Developed the framework of the SIAP Architecture including the SIAP Normative Baseline, Block 0 SIAP Acquisition Roadmap.</p> <p> -(\$0.710M) Block 1 Improvement Plan: Development of the Block 1 Improvement Plan began in FY 01. The warfighting issues to be addressed were approved in CY Dec 2001, Delivery to the JROC is scheduled for Dec 02. This plan will identify the specific changes to be implemented in specific systems to improve the JTAMD FoS SIAP capability. This will include supporting rationale, and acquisition cost/schedule estimates.</p>		

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 4 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4		0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG	
<p>1. (U) FY2002 PLAN:</p> <p>This effort will recommend Joint Data Network enhancements to improve the JTAMD FoS SIAP performance and lay the groundwork for engineering concepts needed to support the 2010 Integrated Architecture. Specific products will include a prioritized list of fixes that will provide the most "bang for the buck"; a set of metrics to define the completeness, continuity, and accuracy of target tracks; and a description of the systems used by the services and the capabilities and limitations of those systems in providing a Single Integrated Air Picture.</p> <p>-\$1.520M) Block 0 Follow-up, includes coordination with Services on Block 0 implementation plans and completing deferred work on Formation Tracking.</p> <p>-\$27.038M) Develop Block 1 Improvement Plan, with focus on JDN enhancements to improve the JTAMD FoS SIAP performance, with a scheduled delivery to the JROC in Dec 02. This plan will identify the specific changes to be implemented in specific systems to improve the JTAMD FoS SIAP capability. This will include supporting rationale, and acquisition estimates/costs. Due to FY 01 ATR not being approved, portions of Block 1 engineering specification development, previously scheduled to begin in FY 01 for delivery Dec 02 will be deferred to FY 03.</p> <p>-\$0.200M) Develop Capability and Limitations Document, May 02. This gives the Theater Commander a description of the capabilities and limitations of the Joint Theater Air and Missile Defense Family of Systems (JTAMD FoS).</p> <p>-\$0.103M) Develop System Engineering Management Plan, Mar 02. The SEMP provides a uniform framework for controlling all SIAP products.</p> <p>-\$6.960M) SIAP Architecture/Normative Baseline: Development continues in FY 02, with a scheduled delivery of Dec 02. The Normative Baseline will comprise the set of SIAP requirements, specifications, interface definitions, and metrics the define the expected SIAP capability of current contributing systems. This will be the yardstick against which current SIAP deficiencies and future objective capabilities will be measured.</p> <p>-\$3.681M) SIAP Component of the Theater Air Missile Defense 2010 Integrated Architecture: Development continues in FY 02 with a scheduled delivery in Dec 02. The SIAP component of the TAMD architecture defines the Joint interfaces and connectivity, Joint performance requirements, and the associated information exchange requirements data models. It will represent key elements of a normative baseline for some future/objective SIAP (in comparison to the Normative Baseline's focus on existing systems).</p> <p>-\$3.225M) SIAP Roadmap: Development continues in FY 02 with a scheduled delivery of Dec 02. The SIAP Roadmap defines block upgrades to satisfy operational requirements leading to the objective SIAP capability.</p>			

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 5 of 8)

UNCLASSIFIED

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	FEBRUARY 2002
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4		0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG	
<p>2. (U) FY2003 PLAN:</p> <p>This effort will continue recommending Joint Data Network enhancements to improve the JTAMD FoS SIAP performance and continue to develop engineering concepts needed to support the 2010 Integrated Architecture. Specific products will include a prioritized list of fixes that will provide the most "bang for the buck"; refine the set of metrics needed to define the completeness, continuity, and accuracy of target tracks; and a description of the systems used by the services and the capabilities and limitations of those systems in providing a Single Integrated Air Picture.</p> <p>(\$1.3M) BLOCK 0: Monitor implementation of Block 0 fixes in Service systems. Conduct technical design reviews with affected weapon systems.</p> <p>(\$37.366M) BLOCK 1: Complete engineering of Block 1 SIAP improvements. Establish technical configuration management of JFCOM approved solutions for Joint and NATO application. Conduct technical design reviews with affected weapon systems.</p> <p>(\$10.3M) BLOCK 2 Initiate definition of Block 2. Translate JROC validated requirements into equipment and computer programs with the Services and JFCOM. Coordinate design and solution development with the Services and Agencies. Develop program objectives and management plan in accordance with the SIAP system engineering process.</p> <p>(\$8.3M) ARCHITECTURE: Continue development of the SIAP component of the JTAMD Architecture. Coordinate the matching of Block 1 and Block 2 solutions to the Joint requirements as defined in the CRDs and Integrated Architecture. Establish maintenance functions to ensure that the Integrated Architecture functions as a Joint requirements engineering structure and decision making tool.</p> <p>(\$4.8M) Systems Engineering Tools and Analysis: Develop and utilize analysis tools to evaluate the technical and warfighting benefits of the SIAP Block Improvements. Such analysis tools consist of modeling and simulation capabilities, hardware in the loop laboratories and data reduction of open-air live exercises. Coordinate with Joint Tactical Data Link Certification Agency for SIAP Block performance compliance with appropriate levels of approval. Collect, analyze and synchronize implementation opportunities with respect to individual Services and weapon systems. Plot predicted and fielded Joint Tactical Data Link performance capabilities timelines. Contribute to the Service POM input and Joint requirements justifications processes to coordinate Joint warfighting requirements in accordance with the CRDs and Integrated Architecture.</p> <p>(\$7.0M) Validation and Certification of SIAP Block 0/1 improvements: Funds will be used to identify and provide SIAP-specific fidelity improvements in national testing and certification facilities. These enhancements to the current land-based infrastructure are necessary to support accurate validation and certification of the implementation of SIAP Block improvements. SIAP Block Improvements will be tested and certified for operational use and the land based testing infrastructure will be used to validate achievement of SIAP's Measures of Effectiveness (MOEs) and Measures of Performance (MOPs).</p> <p>(\$4.9M) Program Management: Continues to support SIAP TF infrastructure requirements such as rent, LAN (local area network), telephone, computers, VTC(video teleconferences) center, conference rooms, office equipment, facilities management and SCIF construction.</p>			

R-1 SHOPPING LIST - Item No. 90

Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 6 of 8)

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CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 1)							DATE: FEBRUARY 2001					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-			0603879N			S3031 - 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 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 0	MIPR	Army PEO/AMD, Huntsville AL	0.293	0.277	VAR	0.211	VAR	0.041	VAR	CONT	CONT	
	MIPR	Navy CHENG, Arlington VA	0.331	0.474		0.223		0.043		CONT	CONT	
	MIPR	Air Force ESC, Boston MA	0.425	0.561		0.239		0.046		CONT	CONT	
	MIPR	Marine MARCOR, Quantico VA	0.207	0.232		0.104		0.020		CONT	CONT	
	VAR	Contract Supt, Various	2.483	1.042		0.743		1.150		CONT	CONT	
Subtotal Block 0			3.739	2.586		1.520		1.300				
Block 1	MIPR	Army PEO/AMD, Huntsville AL	0	0.146	VAR	8.503	VAR	6.633		CONT	CONT	
	MIPR	Navy CHENG, Arlington VA	0	0.155		8.967		6.905		CONT	CONT	
	MIPR	AF ESC/DI, Boston MA	0	0.194		9.613		7.248		CONT	CONT	
	MIPR	Marine MARCOR, Quantico VA	0	0.040		4.158		2.789		CONT	CONT	
	VAR	Contract Supt, Various	0	0.110		9.326		13.791		CONT	CONT	
Subtotal Block 1				0.645		40.567		37.366				
Block 2	MIPR	Army PEO/AMD, Huntsville AL	0	0		0		2.060		CONT	CONT	
	MIPR	Navy CHENG, Arlington VA	0	0		0		2.266		CONT	CONT	
	MIPR	AF ESC/DI, Boston MA	0	0		0		2.369		CONT	CONT	
	MIPR	Marine MARCOR, Quantico VA	0	0		0		1.030		CONT	CONT	
	VAR	Contract Supt, Various	0	0		0		2.575		CONT	CONT	
Subtotal Block 2								10.300				
Architecture	MIPR	Army PEO/AMD, Huntsville AL	0	0		0		1.536		CONT	CONT	
	MIPR	Navy CHENG, Arlington VA	0	0		0		1.625		CONT	CONT	
	MIPR	AF ESC/DI, Boston MA	0	0		0		1.684		CONT	CONT	
	MIPR	Marine MARCOR, Quantico VA	0	0		0		0.786		CONT	CONT	
	VAR	Contract Supt, Various	0	0		0		2.669		CONT	CONT	
Subtotal Architecture								8.300				
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0	0		0		0.988	VAR	CONT	CONT	
Tools & Analysis	MIPR	Navy CHENG, Arlington VA	0	0		0		0.876		CONT	CONT	
	MIPR	AF ESC/DI, Boston MA	0	0		0		1.206		CONT	CONT	
	MIPR	Marine MARCOR, Quantico VA	0	0		0		0.520		CONT	CONT	
	VAR	Contract Supt, Various				0		1.210		CONT	CONT	
Subtotal SE Tools & Analysis								4.800				
Validation and Certification	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren VA	0	0		0		7.000				
TOTAL			3.739	3.231		42.087		69.066				
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	
Exhibit R-3 Cost Analysis (page 1)							DATE: December 2001					
Remarks:												

R-1 SHOPPING LIST - Item No. 90

UNCLASSIFIED

Exhibit R-3, Project Cost Analysis

(Exhibit R-3, page 7 of 8)

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-3 Cost Analysis (page 2)										DATE: FEBRUARY 2002			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER							
RDT&E, N/BA-			0603879N			S3031 - SINGLE INTEGRATED AIR PICTURE SYS ENG TASK FORCE							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation											0.000		
Operational Test & Evaluation											0.000		
Tooling											0.000		
GFE											0.000		
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks:													
Contractor Engineering Support													
Government Engineering Support													
Program Management Support			0.210	0.225		0.540		1.900	CONT	CONT			
Travel			0.040	0.040		0.100		0.100	CONT	CONT			
Labor (Research Personnel)													
Overhead								2.900					
Subtotal Management			0.250	0.265		0.640		4.900	CONT	CONT			
Remarks:													
Total Cost			3.989	3.496		42.727		73.966					
Remarks:													

R-1 SHOPPING LIST - Item No. 90

Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 8 of 8)

UNCLASSIFIED

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FY 2003 RDT&E,N Budget Item Justification Sheet

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0798 OTH Targeting	1,986	2,093	1,664	2,083	2,118	1,980	2,050	CONT.	CONT.
X2144 SEW Engineering	12,086	8,359	9,959	13,686	12,364	13,923	12,807	CONT.	CONT.
X9054 IT-21 Block 1 C4ISR Computing Equipment	5,947							0	5,947
R2630 Adv Comm & Info		1,388						0	6,227
R2357 Maritime Battle Center	23,441	21,486	20,000	19,687	19,010	19,399	19,761	CONT.	CONT.
TOTAL	37,513	39,273	31,623	35,456	33,492	35,302	34,618	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) contains three projects: Over-the-Horizon Targeting (OTH-T), Space and Electronic Warfare (SEW) Engineering, and Maritime Battle Center (MBC). The projects are systems engineering non-acquisition programs with the objectives of developing, testing, and validating Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support naval missions in Joint and Coalition Theater. The mission of this program element is carried out by multiple tasks that are used to ensure Naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into the C4ISR architectures. Additionally the program ensures that (1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the Naval C4ISR architecture as related to the objectives of National Defense Strategy and evolving joint visions and direction, such as Joint Vision 2010 (JV 2010), "Copernicus...C4ISR for the 21st Century," "Forward...From the Sea," C4I For the Warrior, and the Defense Science Board Summer Study Task Force on Information Architecture for the Battlefield and are guided by CINC requirements; and (2) that SEW systems and systems integration effort involves 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, flexible reconfiguration, as well as reduce costs and (3) that SEW systems integration

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 1 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

efforts support Expeditionary C5 Grid (EC5G) to provide the foundation for FORCEnet and the Navy's contribution to the Global Information Grid. The MBC is a distributed organization focusing on experimentation concept development and analysis tasks are coordinated by the Navy Warfare Development Command, with C4ISR technical and acquisition support coordinated by the Space and Naval Warfare Systems Command in FY99. Effective fiscal year 2000, MBC changes claimancies from Space and Naval Warfare Systems Command to Office of Naval Research. The MBC will also act as the Navy representative to the Joint Battle Center and the Battle Labs of other services.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft applications. It also develops a virtual demonstration and validation environment across Navy for C4ISR.

B. (U) PROGRAM CHANGE FOR TOTAL P.E.:

	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>
(U) FY2002 President's Budget	37,750	32,259	
(U) Adjustments from PRESBUDG:			
(U) Congressional Plus-Ups		7,400	
(U) SBIR Adjustments	-470		
(U) Execution Adjustments	233		
(U) Section 8123 Mgmt. Reform Initiative Reduction		-351	
(U) FFRDC Reduction		-35	
FY2003 President's Budget Submission	37,513	39,273	31,623

R-1 Line Item No 92

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

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

(U) COST: (Dollars in Thousands)

NUMBER	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO	TOTAL
TITLE	ACTUAL	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	COMPLETE	PROGRAM
X0798 OTH Targeting	1,986	2,093	1,664	2,083	2,118	1,980	2,050	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Over-the-Horizon Targeting (OTH-T) program provides a virtual, global systems integration and test facility for Information Technology for the 21st Century (IT-21) C4ISR technology that supports the collection, transmission, correlation, and display of track data into a Common Operational Picture (COP) in support of warfighting requirements. This effort was originally undertaken to support targeting of over the horizon weapons such as the TOMAHAWK cruise missile. The common view of the battle space that was provided to the warfighter by OTH-T has been applied across the spectrum of warfare missions; however, the technology and doctrine on which it was based has changed radically in recent years. The result is that the first goal of the OTH-T program is to transition the OTH-T architectures and systems from older Military Standard (MIL-STD) technologies to Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) based technologies that support Network Centric Warfare and the Navy's plan to support JV 2020 implementing IT-21 technology. The second goal of the OTH-T program is to support integration and interoperability of all C4I systems into warfighting capabilities. This support includes providing technical expertise afloat and ashore via a cadre of highly-trained Fleet Systems Engineers who ensure smooth integration of new capabilities to enhance OTH-T during major Fleet exercises and demonstrations which are used to validate and evaluate developed portions of configuration. The OTH-T program integration and testing in support of warfighting capabilities includes interoperability testing for both MIL-STD and IT-21 COTS equipment for submarines, surface, and land based components. Allied interoperability is an important issue for future naval operations, especially with the Navy initiative to expand Internet Protocol (IP) networking throughout the Fleet (IT-21 and Naval Intranet). Specific solutions do not exist to solve the IP connectivity issue with Allies. Funding will allow development of solutions for emerging Allied interoperability requirements. Data throughput will need to be increased for the exchange of large size files within the limitations of the high frequency (HF) medium in support of, for example, Collaboration at Sea (CAS). Funding will allow for further development of potential solutions for merging improved transmission control protocol/internet protocol (TCP/IP) capability with advance digital network systems (ADNS) and existing international standards (e.g.: STANAG 5066). Funding will also allow for development of subnet relay protocols, which will provide for a significant improvement within and between battlegroups.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 3 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH Targeting

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS

- (U) (\$234) Integrated code combination techniques developed during FY00 into internationally agreed HF data profiles for significant improvement in guarantee of delivery of email attachments in poor propagation conditions associated with the HF medium.
- (U) (\$254) Exploited and coordinated subnet relay protocols and multi-frequency band channels to provide greater data throughput in the HF and ultra high frequency (UHF) Line-of-Site radio frequency (RF) mediums.
- (U) (\$145) Based on results of integration testing, developed capability functional description documents which will be used by the programs of record to define system functional requirements that support these capabilities. Developed system interface standards where required. Provided a valid master configuration database in support of the new IT-21 Battle Group configurations.
- (U) (\$296) Conducted systems integration, interoperability, using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment. (Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate IT-21 technologies prior to shipboard installation.) Developed test plans and executed integration tests for IT-21 networks to GCCS-M, participated in JFK battlegroup Distributed Engineering Plant, by providing GCCS-M nodes during the test and collecting track data. Provided the key C4ISR node to the DEP. Provided DEMO, Dry Run, and Briefings for Mr. Schneider, Deputy ASN, RD&A. Provided over 30 briefs to visiting dignitaries, test agencies, program offices, etc. to describe interoperability efforts and certification requirements.
- (U) (\$463) Validated and verified the interoperability of architectures for new capabilities and supporting systems to the fleet. Made corrections and modified Repeatable Performance Evaluation Analysis Tool (REPEAT) software for use in interoperability testing, and distributed to more than 75 additional DoD users, for conducting Navy and joint interoperability testing. Served as technical expert in researching the fleet's technical questions and providing information.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 4 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH Targeting

- (U) (\$392) Ensured joint interoperability of all systems on the NI by enforcing compliance with the Joint Technical Architecture. Verified relevance, recommended modifications to, and maintained OTH-T specifications for support of distribution of the COP to maritime forces. The program's systems engineers made input into the SPAWAR advanced technology division to insure critical deficiencies are high priority during investigation of IT-21. Provided connectivity and conducted integration and interoperability testing and provided systems engineering expertise for both IT-21 and MIL-STD technologies.
 - (U) (\$202) Developed test plans and procedures, and executed interoperability tests in accordance with OPNAV 9410.5A. Identified testing issues via documented trouble reports and worked with developers to resolve prioritized issues. Also worked with developers prior to test events to identify potential problem areas prior to the expenses of testing to preserve resources. Provided test reports and certifications. The following systems were tested: ATWCS and OASIS Display System, TTWCS, GCCS-M, CCS MK II, to name a few.
2. (U) FY 2002 PLAN
- (U) (\$243) Integrate code combination techniques developed during FY01 into internationally agreed HF data profiles for significant improvement in guarantee of delivery of email attachments in poor propagation conditions associated with the HF medium. Exploit HF Full Duplex protocols and adaptive compression techniques to greatly improve data throughput.
 - (U) (\$273) Exploit and coordinate subnet relay protocols and multi-frequency band channels to provide greater data throughput in the HF and UHF Line of Site RF mediums. Exploit HF Beyond-Line-of-Site and Extended-Line-of-Sight ground - and sky - waveforms to improve long range tactical communications. Adapt IP Quality of Service (QOS), Voice over IP (VoIP) and IP VTC (H.323) protocols to subnet relay communications.
 - (U) (\$154) Based on results of integration testing, develop capability functional description documents which will be used by the programs of record to define system functional requirements that support these capabilities. Develop system interface standards where required. Provided a valid master configuration database in support of the new IT-21 Battle Group configurations.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 5 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH Targeting

- (U) (\$314) Conduct systems integration, interoperability, using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment. (Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate IT-21 technologies prior to shipboard installation.) Develop test plans and execute integration tests for IT-21 networks to GCCS-M, participate in Distributed Engineering Plant certification testing, by providing GCCS-M nodes during the test and collecting track data. Provide the key C4ISR node to the DEP. Provide DEMO's, Dry Run, and Briefings as required to visiting dignitaries, test agencies, program offices, etc. to describe interoperability efforts and certification requirements.
- (U) (\$446) Validate and verify the interoperability of architectures for new capabilities and supporting systems to the fleet. Make corrections and modify REPEAT (Repeatable Performance Evaluation Analysis Tool) software for use in interoperability testing, and distribute to new DoD users, to facilitate Navy and joint interoperability testing. Serve as technical experts in researching the fleet's technical questions and providing information.
- (U) (\$413) Ensure joint interoperability of systems on the NI by enforcing compliance with the Joint Technical Architecture. Verify relevance, recommend modifications to, and maintain OTH-T specifications for support of distribution of the COP to maritime forces. The program's systems engineers make input into the SPAWAR advanced technology division to insure critical deficiencies are high priority during investigation of IT-21. Provide connectivity and conduct integration and interoperability testing and provide systems engineering expertise for both IT-21 and MIL-STD technologies.
- (U) (\$250) Perform integration and interoperability testing Over The Horizon, Targeting systems in accordance with OPNAV 9410.5A. Perform certification testing for systems undergoing configuration change, developmental testing or operational testing in accordance with program requirements. Develop test plans and test procedures to perform such testing, record data, submit and track trouble reports and report on status to N62 as to disposition of certification status of OTH-T programs.

3. (U) FY 2003 PLAN

- (U) (\$235) Integrate code combination techniques developed during FY02 into internationally agreed HF data profiles for significant improvement in guarantee of delivery of email attachments in poor propagation conditions associated with the HF medium. Exploit HF Full Duplex protocols and adaptive compression techniques to greatly improve data throughput.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 6 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH Targeting

- (U) (\$261) Exploit and coordinate subnet relay protocols and multi-frequency band channels to provide greater data throughput in the HF and UHF Line-of-Sight RF mediums. Exploit HF Beyond-Line-of-Site and Extended-Line-of-Sight ground - and sky - waveforms to improve long range tactical communications. Adapt IP Quality of Service (QOS), Voice over IP (VoIP), and IP VTC (H.323) protocols to subnet relay communications.
- (U) (\$239) Exploit GOTS/COTS to support integration and interoperability of multi-level coalition forces to enhance OTH-T capabilities in a Network Centric Warfare environment. Validate and verify the specifications for interoperability of the COP, chat, distributive collaborative planning, and network management tools with allied maritime forces.
- (U) (\$426) Conduct systems integration, interoperability, using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment. (Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate IT-21 technologies prior to shipboard installation.) Develop test plans and execute integration tests for IT-21 networks to GCCS-M, participate in Distributed Engineering Plant certification testing, by providing GCCS-M nodes during the test and collecting track data. Provide the key C4ISR node to the DEP. Provide DEMO's, Dry Run, and Briefings as required to visiting dignitaries, test agencies, program offices, etc. to describe interoperability efforts and certification requirements. Update REPEAT test tool to meet the needs of DoD testers in over 50 commands.
- (U) (\$147) Validate and verify the interoperability of architectures for new capabilities and supporting systems to the fleet. Work with the fleet staffs and Naval Doctrine Command to develop policy and doctrine for operations of NVI in support of Network Centric Warfare ideology. Serve as technical expert in researching the fleet's technical questions and providing information. Conduct systems integration and interoperability using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment (SIE). (Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate IT-21 technologies prior to shipboard installation.)
- (U) (\$356) Conduct integration testing and certification, in accordance with OPNAVINST 9410.5, of OTH-T and combat systems with tactical data exchanged over CST (Common operational picture (COP) Synchronization Tools) networks and other networks. These CST networks will operate within battle groups and to ashore nodes while other networks will continue to use Battle Group Database Management (BGDBM). Integration testing to include testing of GCCS-M and Combat Decision Systems (CDS) two-way interfaces. Testing to also address issues of Time Critical Strike with for example Tactical Tomahawk Weapons Control System (TTWCS).

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 7 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH Targeting

B. (U) OTHER PROGRAM FUNDING SUMMARY:

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
(U) PE 0204660N, AGSAG 4B7N	280	430	429	450	444	456	467
(U) PE 0303113N, AGSAG 4A6M	1,086	836	1,156	1,260	1,246	1,263	1,298
(U) RELATED RDT&E: (SEW) Architecture/Engineering Support program element is related to all Naval C4I related efforts.							

C. (U) ACQUISITION STRATEGY: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 8 of 26)

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, FY 2003 RDT&E,N Program Element/Project Cost Breakdown

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X0798

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: OTH TARGETING

Exhibit R-3 Cost Analysis (page 2)									Date:			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/4			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER OTH Targeting X0798			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	FY-03 Cost	FY-03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various	Various	1468							Cont.	Cont.	Cont.
System Test and Evaluation	Various	Various	3648							Cont.	Cont.	Cont.
Systems Engineering	Various	Various	1076	488	Various	516	Various	735	Various	Cont.	Cont.	Cont.
Interoperability Requirements	Various	Various	3266							Cont.	Cont.	Cont.
T & E Tools Development	Various	Various	137	145	Various	154	Various			Cont.	Cont.	Cont.
Systems Integration & Interoperability Testing (LBTN & SIE)	Various	Various	284	296	Various	314	Various	426	Various	Cont.	Cont.	Cont.
Interoperability Validation	Various	Various	443	463	Various	446	Various	147	Various	Cont.	Cont.	Cont.
Joint Interoperability	Various	Various	377	392	Various	413	Various			Cont.	Cont.	Cont.
Testing OTH-T Systems	Various	Various	194	202	Various	250	Various	356	Various	Cont.	Cont.	Cont.
Subtotal T&E			10893	1986		2093		1664		Cont.	Cont.	Cont.
Remarks												
Subtotal Management												
Remarks												
Total Cost			10893	1986		2093		1664		Cont.	Cont.	Cont.

R-1 Line Item No 92

PE/Project Cost Breakdown
(Exhibit R-3, page 9 of 26)

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, FY 2003 RDT&E,N Program Element/Project Cost Breakdown

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

(U) COST: (Dollars in Thousands)

NUMBER	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO	TOTAL
TITLE	ACTUAL	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	COMPLETE	PROGRAM
X2144 SEW Engineering	12,086	8,359	9,959	13,686	12,364	13,923	12,807	CONT.	CONT.

- A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Space and Electronic Warfare (SEW) Engineering is a non-acquisition engineering effort defined as the neutralization or destruction of enemy targets and the enhancement of friendly force battle management through integrated employment and exploitation of the electromagnetic spectrum and the medium of space. SEW Engineering encompasses efforts to ensure that 1) the composite operational capabilities of SEW systems (not the individual component systems) conform to the Naval C4ISR architecture as related to the National Defense Strategy and evolving joint visions and direction such as Joint Vision 2020, Joint Vision 2010, "Copernicus...C4ISR for the 21st Century," "Forward...From the Sea," C4I for the Warrior, and the Defense Science Board Summer Study Task Force Report on Information Architecture for the Battlefield, and are guided by CINC requirements; 2) the systems support emerging fleet requirements as documented and necessitated through concepts of Network Centric Warfare; and 3) the SEW systems and systems integration effort involves 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, flexible reconfiguration, as well as reduce costs; and 4) systems integration efforts support Expeditionary C5 Grid (EC5G) to provide the foundation for FORCEnet and the Navy's contribution to the Global Information Grid. SEW Engineering also provides the Navy support in the demonstration and integration of C4I systems developed by the services and by commercial vendors as part of the annual Joint Warrior Interoperability Demonstration (JWID) sponsored by the Joint Chiefs of Staff as directed by CJCSI 6260.1. Each JWID is designed to identify joint interoperability deficiencies, and to solicit solutions to these deficiencies from commercial industry and military RDT&E agencies. JWID demonstrates these technologies and architecture improvements, conducts an assessment by the joint warfighters and considers mature, low cost, systems/applications for rapid acquisition. Service participants benefit from the exposure and training on new and existing new technologies, infrastructure improvements left behind from the demonstration, knowledge gained on joint and combined operations, and the assessment, selection, and acquisition of mature solutions to existing deficiencies.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 10 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) (\$2,633) IAW CJCSI 6260.01, developed plans for the integration of maturing system developments, military and commercial technologies that support enhanced operational capabilities in key CINC priority areas, Joint Mission Area (JMA) Assessment Thrust Areas, and combined operations into the annual Joint Warrior Interoperability Demonstration (JWID). Integration plans included high-capacity communications, improved Command and Control Warfare (C2W), integrated land fight architecture, trusted systems/multi-level security, improved sensors/strike planning, common operational picture, collaborative planning, knowledge based systems, smart push-warrior pull data flow, theater air defense/force protection, and combat identification. Field demonstrated and assessed Joint Chief of Staff mandated Golden Nuggets Technologies that will benefit operational forces with their immediate employment at sea or in the field.
- (U) (\$1,501) Implemented a C4ISR-T Systems Design effort that is comprised of Battlegroup engineering design activities for Battlegroup deployment and new ship construction, integration of C4ISR systems throughout the Battlegroup, systems interfacing, and high level design across Battlegroup activities (Configuration Management, integration with training, logistics, spares, safety and EMI). Design activities included tactical shore systems, relationships of C4ISR systems to NMCI, and pier-side design and integration across the shore sites and the Fleet.
- (U) (\$963) Continued the migration of the Overarching C4ISR Operational Requirements Documentation to a web-based, fully interactive, collaborative site, where requirements generators, systems developers, and other users requiring such data, can gain access to automated databases and accompanying tools. Continued support to the C4ISR portion of the Joint Technical Architecture/Standards development/documentation and implementation effort, and published periodic updates. Represented and coordinated Navy inputs into the Joint Technical Architecture developed in conjunction with both internal Naval and external service units and agencies including the and ASD(C3I) Joint Technical Architecture (JTA) Development Group (JTADG). Navy inputs to the C4ISR portion of the JTA Version 3.0 were developed in accordance with direction from the Technical Architecture Steering Group (TASG) and the DoD Architecture Coordination Council (ACC).
- (U) (\$788) Developed concept and evaluation alternatives to be explored as part of the CNO N6 Advanced Command & Control Wargame (AC2WG) series. Provided technical guidance and roadmaps that link AC2WG

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 11 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

concepts and Fleet Battle Experiments (FBE's) to evolving Naval C4ISR programs. Translated concepts and guidance into technical design requirements.

- (U) (\$906) Enhanced and refined the C4ISR Planned Systems Design for the POM years. Continued to develop and validate a Naval C4ISR systems design environment to support Naval missions in a Joint and Coalition Theater. Architectural development consisted of (1) assisting OPNAV, Navy Doctrine Command, and Fleet Commanders in the development of battlegroup-wide and hull specific designs, (2) maintaining documentation describing the Systems Architectures/shipboard and ashore configurations; and (3) providing system architecture parameters, attributes, and characteristics necessary to ensure that Program Executives and Managers acquire systems that achieve the desired operational objectives. Participated with the Joint Battle Center and Naval Battle Laboratories to verify and validate overall systems designs and detailed implementation designs. The decomposition of the overarching POM C4ISR Systems Architecture was accomplished. This involved breaking down the specifics of warfighter functions to lower levels of detail. From this, SPAWAR developed the functional design documents for Battle Groups/Amphibious Ready Groups, generic platform designs, and detailed designs for each platform. These developed documents, coupled with control measures, allowed configuration management of installed designs. Sponsored and participated in related IPTs within the claimancy and throughout the Navy Department and DoD, as required and participated in OSD and joint architectural working groups and panels. Defined an end-to-end process model to document the C4ISR systems development process and relationships among the systems development components. Finally, the generated and analyzed a goal C4ISR integrated architecture that provides operational, system, and technical views for a notional Battle Group/Amphibious Ready Group in the future. The integrated architecture followed the guidance of applicable DoD and DoN policies i.e. Operational, Systems and Technical Architectures as defined in the OSD DoD C4ISR Architecture Framework, Joint Technical Architecture, and Information Technology Standard Guidance. The goal architecture denotes integrated naval C4ISR system functionality that help to guide future C4ISR system integration and interoperability. The Operational Architecture integrated architecture captures operational nodes, warfighter activities, system functions, interoperability standards, information exchange requirements (IERS), and performance attributes associated with the IERS.
- (U) (\$716) Augmented/updated/maintained the Overarching C4ISR Operational Requirements documentation. The composite operational capabilities of C4ISR systems were designed so that they conform to the Naval C4ISR architecture as it relates to the National Defense Strategy, evolving joint visions, and direction. This includes items such as Joint Vision 2020, Joint Vision 2010, "Copernicus.C4ISR for the 21st Century," "Forward from the Sea", and C4I for the Warrior and they are guided by CINC requirements. As

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 12 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

operational requirements changed, either through changes in mission, technological change, technical insertion into systems, or through systems integration efforts, these changes were reflected in all applicable requirements documents. Additionally, support to related C4ISR projects as they define and maintain Theater and Battleforce, C4ISR architectures were maintained. Also, integrated future Naval C4ISR capabilities within migration plans and roadmaps linked to operational requirements documentation. Finally, assisted OPNAV in REQ/BAM support for the development of warfighter C4ISR requirements. These requirements were defined by both OPNAV and the Fleet. The products included the support for requisite Baseline Assessment Memoranda, Copernicus Requirements Working Group statements of Fleet requirements, the generation of a SMIDB or like requirements functional traceability matrix from the Fleet based on requirements documents (ORDs, MNS, etc.) and IWARS inputs.

- (U) (\$579) Continued development of the web-based collaborative grid approach where programs/projects are synchronized across the claimancy/acquisition community. The shift for the afloat part of the Navy, from platform-centric warfare to network-centric warfare, and the Naval Intranet for the land-based portion of the Navy, demands that new approaches are identified, matured, and tested with the warfighters and systems developers. The product was a validated and modeled methodology, based on web technology, whereby a matrix of capabilities are mapped to organizations and products, leading to prioritized and scoped C4ISR work elements for claimancy pursuits. This web site contained the results of technology insertion experiments and "lessons learned" from those trials, so that successes can be applied to similar systems enhancement attempts. Included were software reuse experiments, hardware applications, and networking trials.
 - (U) (\$4,000) Navy Collaborative Integrated.
2. (U) FY 2002 PLAN:
- (U) (\$2,631) CJCSI 6260.01, directs all Services to provide funds to support Joint Warrior Interoperability Demonstrations (JWID). JWIDs integrate maturing system developments, military and commercial technologies that support enhanced operational capabilities in key CINC priority areas and Joint Mission Area (JMA) Assessment Thrust Areas with a combined force structure into the annual Joint Warrior Interoperability Demonstration (JWID). JWID 02-03 will continue the 2-year demonstration process. The Theme Year (FY02) demonstration will select promising technologies for acquisition through a rigorous warfighter assessment in a Joint Operational Environment.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 13 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

- (U) (\$474) Implement a C4ISR-T Systems Design effort that is comprised of Battlegroup engineering design activities for Battlegroup deployment and new ship construction, integration of C4ISR systems throughout the Battlegroup, systems interfacing, and high level design across Battlegroup activities (Configuration Management, integration with training, logistics, spares, safety and EMI).
- (U) (\$455) Develop concept and evaluation alternatives to be explored as part of the CNO N6 Advanced Command & Control Wargame (AC2WG) series in order to further develop the operational concept and requirements for Battle Force C2. Provide technical guidance and roadmaps that link AC2WG concepts and Fleet Battle Experiments (FBE's) to evolving Naval C4ISR programs. Translate concepts and guidance into technical design requirements. Using these experiments translate the successful experiments into operational developmental evaluations for long term procurement.
- (U) (\$1,330) Enhance and refine the C4ISR Planned Systems Design and implementation of fleet systems. Continue to develop and validate a Naval C4ISR systems design environment to support the development and implementation of the Expeditionary C4 Grid to enable Network Centric Operations capabilities in support of Naval missions in a Joint and Coalition Theater. Architectural development will consist of (1) assisting OPNAV, Navy Doctrine Command, and Fleet Commanders in the development of battlegroup-wide and hull specific designs, (2) maintaining documentation describing the Systems Architectures/shipboard and ashore configurations; and (3) providing system architecture parameters, attributes, and characteristics necessary to ensure that Program Executives and Managers acquire systems that achieve the desired operational objectives. This architecture will ensure the interoperability of current system/technical architectures with the emerging architecture for the Expeditionary C4 Grid. Participate with the Joint Battle Center and Naval Battle Laboratories to verify and validate overall systems designs and detailed implementation designs. The decomposition of the overarching POM C4ISR Systems Architecture will be accomplished. This involves breaking down the specifics of warfighter functions to lower levels of detail. From this, SPAWAR can develop the functional design documents for Battle Groups/Amphibious Ready Groups, generic platform designs, and detailed designs for each platform. These developed documents, coupled with control measures, will allow configuration management of installed designs. Sponsor and/or participate in related IPTs within the claimancy and throughout the Navy Department and DoD, as required and participate in OSD and joint architectural working groups and panels. Define an end-to-end process model to document the C4ISR systems development process and relationships among the systems development components. Finally, the generation and analysis of a goal C4ISR integrated architecture that provides operational, system, and technical views for a notional Battle Group/Amphibious Ready Group in the future. The integrated architecture

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 14 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

will follow the guidance of applicable DoD and DoN policies i.e. Operational, Systems and Technical Architectures as defined in the OSD DoD C4ISR Architecture Framework, Joint Technical Architecture, and Information Technology Standard Guidance. The goal architecture denotes integrated naval C4ISR system functionality that will help to guide future C4ISR system integration and interoperability. The Operational Architecture integrated architecture captures operational nodes, warfighter activities system functions, interoperability standards, information exchange requirements (IERS), and performance attributes associated with the IERS. Work will be evaluated during fleet experimentation.

- (U) (\$598) Augment/update/maintain the Overarching C4ISR Operational Requirements documentation. The composite operational capabilities of C4ISR systems must be designed so that they conform to the Naval C4ISR architecture as it relates to the National Defense Strategy and evolving joint visions and direction, such as Joint Vision 2020, Joint Vision 2010, "Copernicus...C4ISR for the 21st Century," "Forward...From the Sea", C4I for the Warrior and are guided by CINC requirements. As operational requirements change, either through changes in mission, technological change, technical insertion into systems, or through systems integration efforts, these changes must be reflected in all applicable requirements documents. Additionally, support to related C4ISR projects as they define and maintain Theater and Battleforce C4ISR architectures must be maintained. Also, integrate future Naval C4ISR capabilities within migration plans and roadmaps linked to operational requirements documentation. Finally, assist OPNAV in REQ/BAM support for the development of warfighter C4ISR requirements. These requirements are defined by both OPNAV and the Fleet. The products include the support for requisite Baseline Assessment Memoranda, Copernicus Requirements Working Group statements of Fleet requirements, the generation of a SMIDB or like requirements functional traceability matrix from the Fleet based on requirements documents (ORDs, MNS, etc.) and IWARS inputs.
- (U) (\$2,000) Develop architecture and supporting systems to tie together the unique C2 requirements of a battle force for a fully web enabled Network Centric operation that will allow the operators to take full advantage of the meta data available to them over sensor, weapon, and C4I information grids. Forward deployed forces fully netted with multiple air, sea, and undersea platforms will create a huge base of information to be processed and analyzed. The Expeditionary C4 grid (EC4G) will automate the infrastructure for forward deployed forces.
- (U) (\$871) Develop architecture for establishing a BF network using LOS C4ISR systems for surface and air platforms that interface with organic shore elements and assess this LOS and the band and bandwidth requirements as well as the meta data requirements for this system. Include the network interoperability strategy to ensure this concept is integrated and not a stand alone.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 15 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

3. (U) FY 2003 PLAN:

- (U) (\$1,918) CJCSI 6260.01 directs all Services to provide funds to support Joint Warrior Interoperability Demonstrations (JWID). JWIDs integrate maturing system developments, military and commercial technologies that support enhanced operational capabilities in key CINC priority areas and Joint Mission Area (JMA) Assessment Thrust Areas with a combined force structure into the annual Joint Warrior Interoperability Demonstration (JWID). JWID 02-03 will continue the 2-year demonstration process. In the Exploitation Year (FY03) demonstration, selected technologies are acquired and receive verified Concepts of Operation (CONOPs), Standard Operating Procedures (SOPs), Tactics, Techniques and Procedures (TTPs), and will be distributed to the warfighters. Additionally, the Exploitation Year will provide an opportunity to assess other demonstration technologies that are not ready for acquisition but may have value for future use.
- (U) (\$4,793) Demonstrate/validate EC5G networking and communication capabilities required to support all warfare missions (i.e. TAMD, TCS, USW, etc.) and support operations. Optimize experimentation, S&T, and acquisition to transform the tactical/operational network infrastructure for FORCENet and Network-Centric Operations. Focus areas include Ashore Network Backbone Infrastructure, Wireless Line-of-Sight Networking, RF Connectivity and Throughput, TADILS Gateway, Composite Networking, Information Assurance, Automated Network Services, Aerial Communications Package, Allied/Coalition Interoperability.
- (U) (\$396) Implement a C4ISR-T Systems Design effort that is comprised of Battlegroup engineering design activities for Battlegroup deployment and new ship construction, integration of C4ISR systems throughout the Battlegroup, systems interfacing, and high level design across Battlegroup activities (Configuration Management, integration with training, logistics, spares, safety and EMI).
- (U) (\$243) Develop concept and evaluation alternatives to be explored as part of the CNO N6 Advanced Command & Control Wargame (AC2WG) series. Provide technical guidance and roadmaps that link AC2WG concepts and Fleet Battle Experiments (FBE's) to evolving Naval C4ISR programs. Translate concepts and guidance into technical design requirements. Using these experiments translate the successful experiments into operational developmental evaluations for long term procurement.
- (U) (\$725) Enhance and refine the C4ISR Planned Systems Design for the POM years. Continue to develop

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 16 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

and validate a Naval C4ISR systems design environment to support Naval missions in a Joint and Coalition Theater. Architectural development will consist of (1) assisting OPNAV, Navy Doctrine Command, and Fleet Commanders in the development of battlegroup-wide hull specific designs; (2) maintaining documentation describing the Systems Architectures, shipboard/ashore configurations; and (3) providing system architecture parameters, attributes, and characteristics necessary to ensure that Program Executives and Managers acquire systems that achieve the desired operational objectives. Participate with the Joint Battle Center and Naval Battle Laboratories to verify and validate overall systems designs and detailed implementation designs. The decomposition of the overarching POM C4ISR Systems Architecture will be accomplished. This involves breaking down the specifics of warfighter functions to lower levels of detail. From this, SPAWAR can develop the functional design documents for Battle Groups/Amphibious Ready Groups, generic platform designs, and detailed designs for each platform. These developed documents, coupled with control measures, will allow configuration management of installed designs. Sponsor and/or participate in related IPTs within the claimancy and throughout the Navy Department and DoD, as required and participate in OSD and joint architectural working groups and panels. Define an end-to-end process model to document the C4ISR systems development process and relationships among the systems development components. Finally, the generation and analysis of a goal C4ISR integrated architecture that provides operational, system, and technical views for a notional Battle Group/Amphibious Ready Group in the future. The integrated architecture will follow the guidance of applicable DoD and DoN policies i.e. Operational, Systems and Technical Architectures as defined in the OSD DoD C4ISR Architecture Framework, Joint Technical Architecture, and Information Technology Standard Guidance. The goal architecture denotes integrated naval C4ISR system functionality that will help to guide future C4ISR system integration and interoperability. The Operational Architecture integrated architecture captures operational nodes, warfighter activities system functions, interoperability standards, information exchange requirements (IERS), and performance attributes associated with the IERS.

- (U) (\$432) Augment/update/maintain the Overarching C4ISR Operational Requirements documentation. The composite operational capabilities of C4ISR systems must be designed so that they conform to the Naval C4ISR architecture as it relates to the National Defense Strategy and evolving joint visions and direction, such as Joint Vision 2020, Joint Vision 2010, "Copernicus...C4ISR for the 21st Century," "Forward...From the Sea", C4I for the Warrior and are guided by CINC requirements. As operational requirements change, either through changes in mission, technological change, technical insertion into systems, or through systems integration efforts, these changes must be reflected in all applicable requirements documents. Additionally, support to related C4ISR projects as they define and maintain Theater and Battleforce C4ISR architectures must be maintained. Also, integrate future Naval C4ISR capabilities within migration plans and roadmaps linked to operational requirements documentation.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 17 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: SEW ENGINEERING

Finally, assist OPNAV in REQ/BAM support for the development of warfighter C4ISR requirements. These requirements are defined by both OPNAV and the Fleet. The products include the support for requisite Baseline Assessment Memoranda, Copernicus Requirements Working Group statements of Fleet requirements, the generation of a SMIDB or like requirements functional trace-ability matrix from the Fleet based on requirements documents (ORDs, MNS, etc.) and IWARS inputs.

- (U) (\$914) Develop architecture to tie together the unique C2 requirements of a battle force for a fully web enabled Network Centric operation that will allow the operators to take full advantage of the meta data available to them over sensor, weapon, and C4I information grids. Forward deployed forces, fully netted with multiple air, sea, and undersea platforms, will create a huge base of information to be processed and analyzed. The Expeditionary C4 grid (EC4G) will automate the infrastructure for forward deployed forces.
- (U) (\$538) Develop architecture for establishing a BF network using LOS C4ISR systems for surface and air platforms that interface with organic shore elements and assess this LOS and the band and bandwidth requirements as well as the meta data requirements for this system. Include the network interoperability strategy to ensure this concept is integrated and not a stand alone.

B. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

C. (U) ACQUISITION STRATEGY: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 18 of 26)

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, FY 2003 RDT&E,N Program Element/Project Cost Breakdown

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: SEW ENGINEERING

Exhibit R-3 Cost Analysis (page 1)									Date:			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N 4			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER SEW Engineering X2144			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	FY-03 Cost	FY-03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal Product Development												
Remarks:												
SEW/C4I Technology Integration	Various	Various	4554							0	4554	4554
Systems A&E and Validation	Various	Various	12985							0	12985	12985
C4ISR/C4ISR-T Systems Design/Capabilities*	Various	Various	5091	2986	Various	4675	Various	2573	Various	Cont.	Cont.	Cont.
C4ISR Operational Requirements	Various	Various	2773	1679	Various	598	Various	432	Various	Cont.	Cont.	Cont.
AC2WG	Various	Various		788	Various	455	Various	243	Various	Cont.	Cont.	Cont.
Information Repository/Naval Architecture Database	Various	Various	4544							0	4544	4544
Navy Collaborated Integrated	Various	Various		4000	Various					Cont.	Cont.	Cont.
Subtotal Support	Various	Various	29947	9453		5728		3248		Cont.	Cont.	Cont.
Remarks:												

R-1 Line Item No 92

PE/Project Cost Breakdown
(Exhibit R-3, page 19 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N Program Element/Project Cost Breakdown

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: X2144

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: SEW ENGINEERING

Exhibit R-3 Cost Analysis (page 2)									Date:			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N 4			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER SEW Engineering X2144			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	FY-03 Cost	FY-03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SEW Engr/JWID	Various	Various	7522	2633	Various	2631	Various	1918	Various	Cont.	Cont.	Cont.
SEW Engr/EC5G	Various	Various						4793	Various	Cont.	Cont.	Cont.
Subtotal T&E	Various	Various	7522	2633		2631		6711		Cont.	Cont.	Cont.
Remarks												
Subtotal Management												
Total Cost			37469	12086		8359		9959		Cont.	Cont.	Cont.

R-1 Line Item No 92

PE/Project Cost Breakdown
(Exhibit R-3, page 20 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

(U) COST: (Dollars in Thousands)

PROJECT NUMBER	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	TO	TOTAL
TITLE	ACTUAL	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	COMPLETE	PROGRAM
R2357 Maritime Battle Center	23,441	21,486	20,000	19,687	19,010	19,399	19,761	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the Maritime Battle Center (MBC) is to execute the Naval Warfare Innovation Process. The process takes concepts developed by the Strategic Studies Group and approved by the Chief of Naval Operations into Fleet Battle Experiments; conducts preliminary sub-scale experiments and technological demonstrations focused on the advanced engineering and operational system development of systems related to all conflict levels of Littoral Battlespace. The MBC environment is a network centric environment that links the existing "core" Naval facilities to the Marine Corps Warfighting Lab (MCWL), the Joint Battle Center/Federated Battle Lab, and technologists in industry and academia. The MBC is essential to the evolution of combat capabilities since it is the engine for validating the new network centric warfare techniques in conjunction with the Sea Based Battle Laboratories (SBBL), Science & Technology (S&T) initiatives and other initiatives that originate with the operating forces. The MBC supports the early and sustained involvement of Joint Warfighters in refining the technology to meet the tactics, techniques, and procedures needed for 2010-2020 Littoral Battlespace. The MBC will have multiple roles since it is a crosscutting organization involved in several facets of concept, platform, weapons, weapon systems and Information Technologies (IT), Information System (IS) and Information Management (IM) systems development and integration. These include collaborative planning, operational experimentation planning and execution, technology transition/acquisition support, systems engineering and integration, technology assimilation and operational demonstrations.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 21 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: R2357

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: MARITIME BATTLE
CENTER

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 2001 ACCOMPLISHMENTS

- (U) (\$4,788) Fleet Battle Experiment (FBE) Analysis and Core Support: The management and administration of MBC activities includes oversight of the experimental planning phase, the execution and collection phases, the analysis phase, and the output decision phase. This entails the integration of many preliminary experiments and technology demonstrations coupled with the inputs of experienced military leaders, current warfighting CINCs, and technologists from industry and academia.
- (U) (\$3,187) Enabling Technical Development: Prior to any technology transition to the Numbered Fleet Commanders during a FBE or Limited Objective Experiment (LOE). The technology needs preliminary engineering experimentation to determine its compatibility and compliance with the Global Command and Control System (GCCS) architectures, IT 21 architectures, and the identification of high performance and interoperability issues. The objectives of these preliminary experiments is to bring information superiority to Fleet operations while achieving a level of critical mass in the early identification of technologies with "production" potential. These technologies include commercially developed technologies in collaborative planning, interactive sharing, the correlation of decision data-reducing "decision time, and the exploration of dynamically managed circuits operating in sea, ground, and/or aerospace domains.
- (U) (\$14,135) FBE Direct Experimentation: The Numbered Fleet Commanders are designated experimentation leads for FBEs and LOEs. The Fleet Commander in the Area of Responsibility where the experiment is held will lead the FBE series and designate their flagship as SBBL that will work with the MBC Director in the conduct of the FBE. This enables the Fleet to directly participate in the development of future Navy concepts and capabilities and provides the Fleet an opportunity to provide immediate feedback to the technologist and concept developer.
- (U) (\$1,331) Technical Evaluation: MBC will plan and participate in planning by other services and joint commands of exercises and tests that involve the Navy experimentation process. Its core competency will be fleet operations, exercise designs, costing, equipping and exercise analysis and overall evaluations with recommendations for future related activities. The technical operations will also evaluate the results of Advanced Concept Technology Demonstrations (ACTDs), Joint Warrior Interoperability Demonstration (JWIDs), and Joint Battle Center (JBC) activities and determine the most expeditious paths to transition such

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 22 of 26)

UNCLASSIFIED

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FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: R2357

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: MARITIME BATTLE
CENTER

concepts into actual and sustainable Naval warfighting capability. As promising innovative technologies emerge from the commercial section, the technical operations element will devise insertion strategies for prototypes. Using existing resources, the components needed to provide the required set of capabilities will be generated and brought into operation for testing and analysis purposes. Navy laboratory support from all claimancies will be tasked dependent on the requirements. Knowledge of laboratory capabilities and projected needs of such laboratories will be inherent in this support. Joint exercise support supplied by maritime forces will also be coordinated using this organizational function.

2. (U) FY 2002 PLAN:

- (U) (\$4,091) FBE Analysis and Core Support: The management and administration of MBC activities includes oversight of the experimental planning phase, the execution and collection phases, the analysis phase, and the output decision phase. This entails the integration of many preliminary experiments and technology demonstrations coupled with the inputs of experienced military leaders, current warfighting CINCs, and technologists from industry and academia.
- (U) (\$2,598) Enabling Technical Development: Prior to any technology transition to the Numbered Fleet Commanders during a FBE or LOE. The technology needs preliminary engineering experimentation to determine its compatibility and compliance with the GCCS architectures, IT 21 architectures, and the identification of high performance and interoperability issues. The objectives of these preliminary experiments is to bring information superiority to Fleet operations while achieving a level of critical mass in the early identification of technologies with "production" potential. These technologies include commercially developed technologies in collaborative planning, interactive sharing, the correlation of decision data-reducing "decision time, and the exploration of dynamically managed circuits operating in sea, ground, and/or aerospace domains.
- (U) (\$13,887) FBE Direct Experimentation: The Numbered Fleet Commanders are designated experimentation leads for FBEs and LOEs. The Fleet Commander in the AOR where the experiment is held will lead the FBE series and designate their flagship as SBBL that will work with the MBC Director in the conduct of the FBE. This enables the Fleet to directly participate in the development of future Navy concepts and capabilities and provides the Fleet an opportunity to provide immediate feedback to the technologist and concept developer.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 23 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: R2357

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: MARITIME BATTLE
CENTER

- (U) (\$910) Technical Evaluation: MBC will plan and participate in planning by other services and joint commands of exercises and tests that involve the Navy experimentation process. Its core competency will be fleet operations, exercise designs, costing, equipping and exercise analysis and overall evaluations with recommendations for future related activities. The technical operations will also evaluate the results of ACTDs, JWIDs, and JBC activities and determine the most expeditious paths to transition such concepts into actual and sustainable Naval warfighting capability. As promising innovative technologies emerge from the commercial section, the technical operations element will devise insertion strategies for prototypes. Using existing resources, the components needed to provide the required set of capabilities will be generated and brought into operation for testing and analysis purposes. Navy laboratory support from all claimancies will be tasked dependent on the requirements. Knowledge of laboratory capabilities and projected needs of such laboratories will be inherent in this support. Joint exercise support supplied by maritime forces will also be coordinated using this organizational function.

3. (U) FY 2003 PLAN:

- (U) (\$4,000) FBE Analysis and Core Support: The management and administration of MBC activities includes oversight of the experimental planning phase, the execution and collection phases, the analysis phase, and the output decision phase. This entails the integration of many preliminary experiments and technology demonstrations coupled with the inputs of experienced military leaders, current warfighting CINCs, and technologists from industry and academia.
- (U) (\$2,034) Enabling Technical Development: Prior to any technology transition to the Numbered Fleet Commanders during a FBE or LOE. The technology needs preliminary engineering experimentation to determine its compatibility and compliance with the GCCS architectures, IT 21 architectures, and the identification of high performance and interoperability issues. The objectives of these preliminary experiments is to bring information superiority to Fleet operations while achieving a level of critical mass in the early identification of technologies with "production" potential. These technologies include commercially developed technologies in collaborative planning, interactive sharing, the correlation of decision data-reducing "decision time, and the exploration of dynamically managed circuits operating in sea, ground, and/or aerospace domains.
- (U) (\$13,000) FBE Direct Experimentation: The Numbered Fleet Commanders are designated experimentation

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 24 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Budget Item Justification

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: R2357

PROGRAM ELEMENT TITLE: SEW Architecture/Eng PROJECT TITLE: MARITIME BATTLE
CENTER

leads for FBEs and LOEs. The Fleet Commander in the AOR where the experiment is held will lead the FBE series and designate their flagship as SBBL that will work with the MBC Director in the conduct of the FBE. This enables the Fleet to directly participate in the development of future Navy concepts and capabilities and provides the Fleet an opportunity to provide immediate feedback to the technologist and concept developer.

- (U) (\$966) Technical Evaluation: MBC will plan and participate in planning by other services and joint commands of exercises and tests that involve the Navy experimentation process. Its core competency will be fleet operations, exercise designs, costing, equipping and exercise analysis and overall evaluations with recommendations for future related activities. The technical operations will also evaluate the results of ACTDs, JWIDs, and JBC activities and determine the most expeditious paths to transition such concepts into actual and sustainable Naval warfighting capability. As promising innovative technologies emerge from the commercial section, the technical operations element will devise insertion strategies for prototypes. Using existing resources, the components needed to provide the required set of capabilities will be generated and brought into operation for testing and analysis purposes. Navy laboratory support from all claimancies will be tasked dependent on the requirements. Knowledge of laboratory capabilities and projected needs of such laboratories will be inherent in this support. Joint exercise support supplied by maritime forces will also be coordinated using this organizational function.

B. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

C. (U) ACQUISITION STRATEGY: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item No 92

Budget Item Justification
(Exhibit R-2, page 25 of 26)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N Program Element/Project Cost Breakdown

DATE: FEBRUARY 2002

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0604707N

PROJECT NUMBER: R2357

PROGRAM ELEMENT TITLE: SEW Architecture/Eng

PROJECT TITLE: MARITIME BATTLE
CENTER

Exhibit R-3 Cost Analysis (page 1)									Date:			
APPROPRIATION/BUDGET ACTIVITY RDT&E,N			PROGRAM ELEMENT 0604707N						PROJECT NAME AND NUMBER Maritime Battle Center R2357			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	FY-03 Cost	FY-03 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	30454	18653	Various	17395	Various	16000		CONT	CONT	CONT
Subtotal T&E			30454	18653		17395		16000		CONT	CONT	CONT
Remarks												
Program Management	Various	Various	5941	4788	Various	4091	Various	4000		CONT	CONT	CONT
Subtotal Management			5941	4788		4091		4000		CONT	CONT	CONT
Remarks												
Total Cost			36395	23441		21486		20000		CONT	CONT	CONT

R-1 Line Item No 92

PE/Project Cost Breakdown
(Exhibit R-3, page 26 of 26)

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