DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2004/2005
BIENNIAL BUDGET ESTIMATES

JUSTIFICATION OF ESTIMATES
FEBRUARY 2003

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

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 2002	FY 2003	FY 2004	FY 2005	SEC
35	0603207N	Air/Ocean Tactical Applications	04	30.415	33.036	22.832	24.978	U
36	0603216N	Aviation Survivability	04	29.108	20.378	6.809	5.921	U
37	0603237N	Deployable Joint Command and Control	04	0.000	31.761	79.449	43.181	U
38	0603254N	ASW Systems Development	04	14.427	25.335	11.149	8.608	U
39	0603261N	Tactical Airborne Reconnaissance	04	1.923	1.877	7.051	6.461	U
40	0603382N	Advanced Combat Systems Technology	04	3.111	3.276	3.394	3.346	U
41	0603502N	Surface and Shallow Water Mine Countermeasure	04	137.208	148.356	140.731	101.076	U
42	0603506N	Surface Ship Torpedo Defense	04	18.054	14.321	48.347	53.730	U
43	0603512N	Carrier Systems Development	04	157.969	111.395	144.965	162.080	U
44	0603513N	Shipboard System Component Development	04	280.795	256.366	20.431	19.251	U
45	0603525N	PILOT FISH	04	96.871	69.969	95.301	78.447	U
46	0603527N	RETRACT LARCH	04	49.002	27.854	74.111	82.812	U
47	0603536N	RETRACT JUNIPER	04	0.000	0.000	20.526	74.885	U
48	0603542N	Radiological Control	04	1.009	1.055	1.112	0.959	U
49	0603553N	Surface ASW	04	3.542	3.184	2.506	2.698	U
50	0603559N	SSGN Coversion	04	72.162	89.743	68.988	19.499	U
51	0603561N	Advanced Submarine System Development	04	122.614	129.601	52.744	158.595	U
52	0603562N	Submarine Tactical Warfare Systems	04	9.120	13.075	6.027	6.350	U
53	0603563N	Ship Concept Advanced Design	04	22.437	25.102	7.679	7.545	U
54	0603564N	Ship Preliminary Design & Feasibility Studies	04	12.478	6.840	0.000	0.000	U
55	0603570N	Advanced Nuclear Power Systems	04	170.706	211.314	201.239	174.239	U
56	0603573N	Advanced Surface Machinery Systems	04	2.997	2.867	1.468	0.000	U

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 2002	FY 2003	FY 2004	FY 2005	SEC
57	0603576N	CHALK EAGLE	04	35.438	20.462	17.463	14.127	U
58	0603581N	Littoral Combat Ship (LCS)	04	0.000	33.099	158.071	180.587	U
59	0603582N	Combat System Integration	04	63.904	57.048	86.836	48.439	U
60	0603609N	Conventional Munitions	04	23.484	17.988	42.539	43.461	U
61	0603611M	MARINE CORPS ASSAULT VEHICLES	04	252.634	270.255	240.695	237.819	U
62	0603612M	MC Mine Countermeasures	04	0.000	0.486	1.215	6.032	U
63	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	04	33.934	31.059	19.700	20.612	U
64	0603654N	Joint Service Explosive Ordnance Development	04	12.356	12.589	12.385	15.632	U
65	0603658N	Cooperative Engagement	04	107.334	109.606	72.506	76.918	U
66	0603713N	Ocean Engineering Technology Development	04	15.173	14.920	18.180	14.917	U
67	0603721N	Environmental Protection	04	44.944	43.985	30.127	31.815	U
68	0603724N	Navy Energy Program	04	6.678	14.975	1.713	1.880	U
69	0603725N	Facilities Improvement	04	1.670	3.300	1.440	1.567	U
70	0603734N	CHALK CORAL	04	45.280	65.552	61.453	57.836	U
71	0603739N	Navy Logistic Productivity	04	34.100	26.133	7.591	7.957	U
72	0603746N	RETRACT MAPLE	04	159.363	268.883	300.864	240.095	U
73	0603748N	LINK PLUMERIA	04	63.048	81.081	105.363	110.825	U
74	0603751N	RETRACT ELM	04	21.313	21.417	43.755	48.260	U
75	0603755N	Ship Self Defense	04	9.054	5.800	9.733	10.605	U
76	0603764N	LINK EVERGREEN	04	27.101	54.736	95.796	95.899	U
77	0603787N	Special Processes	04	65.285	38.879	53.450	51.837	U
78	0603790N	NATO Research and Development	04	12.293	8.989	7.941	11.955	U

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 2002	FY 2003	FY 2004	FY 2005	SEC
79	0603795N	Land Attack Technology	04	140.054	124.142	63.434	57.141	U
80	0603851M	NONLETHAL WEAPONS - DEM/VAL	04	32.524	25.866	43.445	43.492	U
81	0603857N	All Service Combat ID Evaluation Team (ASCIET)	04	12.994	14.084	16.765	15.218	U
82	0603860N	Joint Precision Approach & Landing Systems (JPALS)	04	0.000	11.668	24.304	38.989	U
83	0603879N	Single Int. Air Picture (SIAP) Sys Eng	04	41.381	71.952	15.053	7.831	U
84	0603889N	Counterdrug RDT&E Projects	04	24.809	0.000	0.000	0.000	U
85	0604272N	Tactical Air Directional Infrared Countermeasures	04	4.143	0.000	0.000	0.000	U
86	0604327N	Hard/Deeply Buried Tgt Defeat Sys (HDBTDS) Program	04	0.000	0.000	0.000	9.789	U
87	0604707N	Space & Electronic Warfare (SEW) Arch/Eng Support	04	38.664	32.565	31.369	26.366	U
TOTAL	Demonstration and Validation (Dem/Val)			2,564.903	2,708.224	2,600.045	2,562.562	

Fiscal Year 2004/2005 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, **[**$13,946,085,000**]** *$14,106,653,000*, to remain available for obligation until September 30, **[**2004**]** *2005*: *Provided*, That funds appropriated in this paragraph which are available for the V–22 may be used to meet unique operational requirements of the Special Operations Forces*: Provided further, That funds appropriated in this paragraph shall be available for the Cobra Judy program. (10 U.S.C. 174, 2352–54, 7522; Department of Defense Appropriations Act, 2003.)*

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**						R-1 ITEM NOMENCLATURE PE 0603207N Air/Ocean Tactical Applications					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**86.560**	**30.415**	**33.036**	**22.832**	**24.978**	**25.683**	**31.034**	**31.537**	**32.658**	**Continuing**	**Continuing**
X2341 METOC Data Acquisition	**23.671**	**8.561**	**9.823**	**7.896**	**8.627**	**8.851**	**10.697**	**10.877**	**11.063**	**Continuing**	**Continuing**
X2342 METOC Data Assimilation and Modeling	**37.066**	**12.829**	**12.479**	**7.222**	**7.966**	**8.212**	**9.904**	**10.032**	**10.770**	**Continuing**	**Continuing**
X2343 Tactical METOC Applications	**21.615**	**7.606**	**8.068**	**6.553**	**7.120**	**7.318**	**8.857**	**9.022**	**9.189**	**Continuing**	**Continuing**
X2344 Precise Timing and Astrometry	**4.208**	**1.419**	**1.443**	**1.161**	**1.265**	**1.302**	**1.576**	**1.606**	**1.636**	**Continuing**	**Continuing**
X9168 Prototype Regional Forecast Hub	**0.000**	**0.000**	**1.223**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**1.223**
											0.000
Quantity of RDT&E Articles											**0**

(U) A. 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**.** A congressional plus up for Prototype Regional Forecast (PRF) Hub is provided for FY03.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications					PROJECT NUMBER AND NAME X2341 METOC Data Acquisition					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**23.671**	**8.561**	**9.823**	**7.896**	**8.627**	**8.851**	**10.697**	**10.877**	**11.063**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

(U) A. 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. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2341 METOC Data Acquisition

(U) B. Accomplishments/Planned Program

UAV Sensors	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.229	1.230	0.972	1.263
RDT&E Articles Quantity				

FY02 - Completed sensor integration and development of UAV sensors in Tier II Plus Vehicles. Began development of sensor suite for Global Hawk (previously called "Tier III") Vehicles.
FY03 - Continue development of sensor suite for Global Hawk UAV.
FY04 - Complete development of sensor suite for Global Hawk UAV. Spiral development of miniaturized UAV sensor suites for mini/micro UAV platforms.
FY05 - Continue development of miniaturized sensor suites for mini/micro UAV platforms.

Acoustic Data Inversion	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.175	1.590	1.241	1.349
RDT&E Articles Quantity				

FY02 - Continued assessments of temporal and spatial variability of littoral environments for acoustic data inversion.
FY03 - Continue assessments of temporal and spatial variability of littoral environments for acoustic data inversion.
FY04 - Continue assessments of temporal and spatial variability of littoral environments for acoustic data inversion.
FY05 - Complete assessments of temporal and spatial variability of littoral environments for acoustic data inversion. Spiral development of advanced acoustic data inversion techniques incorporating Expert System technology.

Ambient Noise Data	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.065	1.340	1.071	1.230
RDT&E Articles Quantity				

FY02 - Continued development of advanced techniques to acquire and manage ambient noise data.
FY03 - Continue development of advanced techniques to acquire and manage ambient noise data.
FY04 - Continue development of advanced techniques to acquire and manage ambient noise data.
FY05 - Continue development of advanced techniques to acquire and manage ambient noise data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2341 METOC Data Acquisition

(U) B. Accomplishments/Planned Program

Autonomous Clandestine Sensors	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.068	1.292	1.062	1.320
RDT&E Articles Quantity				

FY02 - Began development of autonomous clandestine sensors for measurements in denied areas.
FY03 - Continue development of autonomous clandestine sensors for measurements in denied areas.
FY04 - Complete development of autonomous clandestine sensors for measurements in denied areas. Spiral development of next-generation autonomous clandestine sensors for data acquisition in denied areas.
FY05 - Continue development of next-generation autonomous clandestine sensors for data acquisition in denied areas.

Data Connectivity	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.280	1.320	1.071	1.225
RDT&E Articles Quantity				

FY02 - Completed development of data connectivity with the next generation Tactical Air Mission Planning System (TAMPS 7.0). Continued development of data connectivity with GCCS/M. Began development of data connectivity with Joint C4ISR.
FY03 - Continue development of data connectivity with GCCS/M and Joint C4ISR.
FY04 - Complete development of data connectivity with GCCS/M. Continue development of data connectivity with Joint C4ISR.
FY05 - Complete development of data connectivity with Joint C4ISR. Spiral development of data connectivity methods for next-generation command and control systems.

Acoustic Data Acquisition	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.724	1.901	1.581	1.144
RDT&E Articles Quantity				

FY02 - Continued development of next-generation acoustic data acquisition techniques.
FY03 - Complete development of next-generation acoustic data acquisition techniques. Spiral development of advanced technology through the sensor data acquisition techniques.
FY04 - Continue development of advanced technology through the sensor data acquisition techniques.
FY05 - Complete development of advanced technology through the sensor data acquisition techniques. Spiral development of expert system acoustic data acquisistion techniques to directly ingest data obtained from tactical sensors.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2341 METOC Data Acquisition

(U) B. Accomplishments/Planned Program

DMAP	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.020	1.150	0.898	1.096
RDT&E Articles Quantity				

FY02 - Continued information management and Digital Mapping Charting Geodesy Analysis Program (DMAP) functions.
FY03 to FY05 - Continue information management and DMAP functions.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2341 METOC Data Acquisition

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget	9.180	10.050		
Current BES/President's Budget	8.561	9.823	7.896	8.627
Total Adjustments	-0.619	-0.227		
Summary of Adjustments				
Sec. 313. PL 107-206: Revised Economic Assumption	(0.019)			
Business Process Reform (SEC. 8100)	-	(0.040)		
Economic Assumptions (SEC. 8135)	(0.024)	(0.056)		
IT Cost Growth (SEC. 8109)	-	(0.018)		
FY03 FFRDC reduction Sec. 8029, P.L. 107-248	-	(0.006)		
Miscellaneous Department Adjustments	(0.363)	(0.107)		
FY 2002 SBIR	(0.132)	-		
Sec 8123 Management Reform Initiative	(0.081)	-		
Subtotal	-0.619	-0.227		

(U) Schedule:

Not applicable.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2341 METOC Data Acquisition

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

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) E. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the meteorology and oceanography (METOC) Data Acquisition Project to develop, demonstrate, and validate METOC data collection methods and sensors, and to evolve the ability to provide timely and accurate METOC data and products to the Tactical Commander, all with management oversight by SPAWAR Headquarters.

(U) F. MAJOR PERFORMERS:

N/A

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME X2341 METOC Data Acquisition						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	14.523	3.400	N/A	3.940	N/A	4.470	N/A	CONT	CONT	
	WX	NAWC-AD Lake	0.923	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	CP	ARL/APL	3.786	0.218	N/A	0.350	N/A	0.400	N/A	CONT	CONT	
	WX	NSWC	1.627	0.400	N/A	0.275	N/A	0.300	N/A	CONT	CONT	
	CP	New Age	0.783	1.095	N/A	0.650	N/A	0.705	N/A	CONT	CONT	
	CP	PSI/R.L.Phillips	0.545	0.560	N/A	0.450	N/A	0.500	N/A	CONT	CONT	
	CP	Neptune	0.690	0.350	N/A	0.375	N/A	0.400	N/A	CONT	CONT	
	WX	FNMOC	1.145	0.516	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	N/A	MISC	7.042	3.284	N/A	1.726	N/A	1.717	N/A	CONT	CONT	
											0.000	
											0.000	
Subtotal Software Development			31.064	9.823		7.766		8.492		CONT	CONT	

Remarks:

Systems Engineering	CP	SSA	1.395	0.000	N/A	0.130	N/A	0.135	N/A	CONT	CONT	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			1.395	0.000		0.130		0.135		CONT	CONT	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2341 METOC Data Acquisition						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											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			32.459	9.823		7.896		8.627		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 35

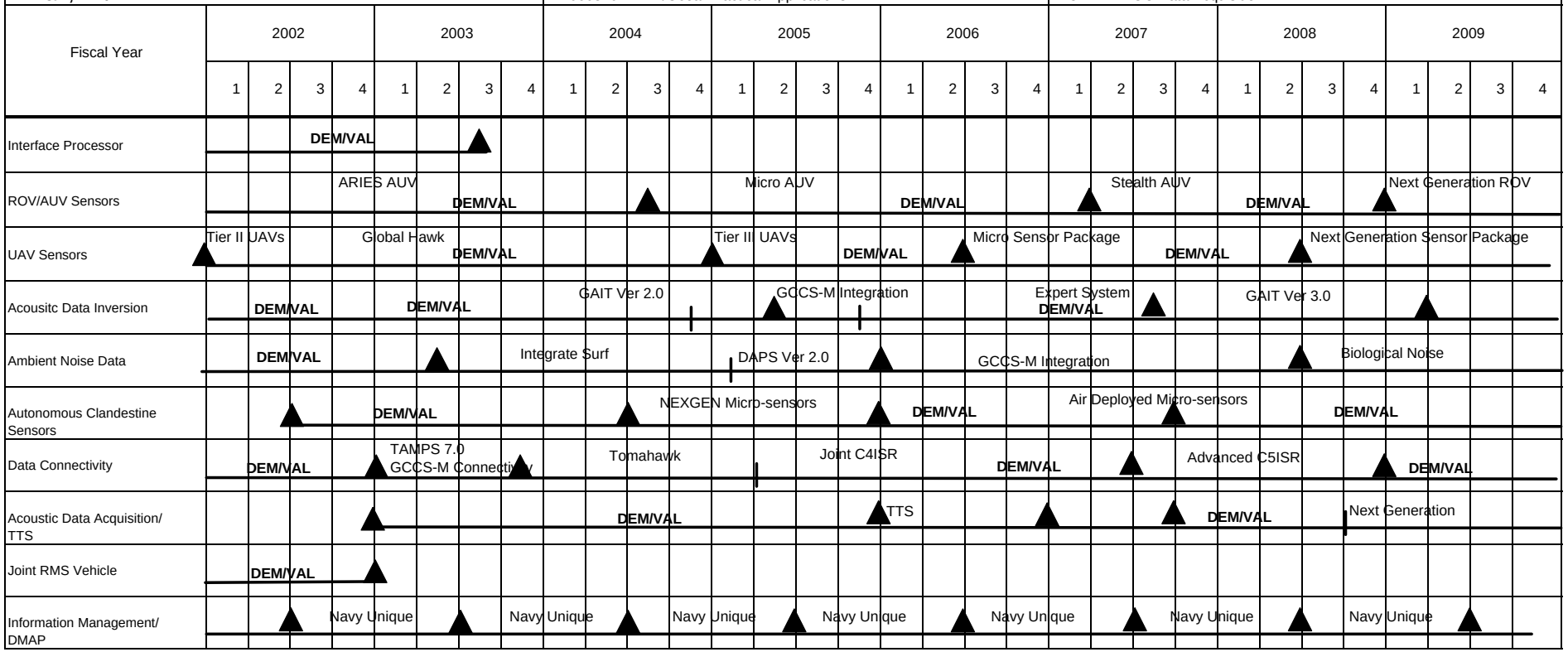
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: X2341 METOC Data Acquisition



R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2341 METOC Data Acquisition			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Interface Processor		3Q						
ROV/AUV Sensors			3Q			1Q	4Q	
UAV Sensors	1Q		4Q		2Q		2Q	
Acoustic Data Inversion				2Q		3Q		1Q
Ambient Noise Data		2Q		4Q			2Q	
Autonomous Clandestine Sensors	2Q		2Q	4Q		3Q		
Data Connectivity	4Q	4Q				2Q	4Q	
Acoustic Data Acquisition/TTS	4Q			4Q	4Q	3Q		
Joint RMS Vehicle	4Q							
DMAP	2Q	2Q	2Q	2Q	2Q	2Q	2Q	2Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications					PROJECT NUMBER AND NAME X2342 METOC Data Assimilation and Modeling					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**37.066**	**12.829**	**12.479**	**7.222**	**7.966**	**8.212**	**9.904**	**10.032**	**10.770**	**Continuing**	**Continuing**
RDT&E Articles Qty											

(U) A. 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.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) B. Accomplishments/Planned Program

Modeling and Simulation	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.436	1.360	0.715	0.920
RDT&E Articles Quantity				

FY02 - Continued modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
FY03 - Continue modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
FY04 - Continue modeling and simulation of atmosphere and ocean environmental effects on Navy systems.
FY05 - Continue modeling and simulation of atmosphere and ocean environmental effects on Navy systems.

Coupled Data Assimilation	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.156	1.280	0.320	0.440
RDT&E Articles Quantity				

FY02 - Continued development of variational techniques for coupled assimilation.
FY03 - Continue development of variational techniques for coupled assimilation.
FY04 - Complete development of variational techniques for coupled assimilation. Spiral development of coupled data assimilation techniques incorporating Artificial Intelligence.
FY05 - Continue development of coupled assimilation techniques incorporating Artificial Intelligence.

Fleet Exercises	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.635	0.650	0.524	0.530
RDT&E Articles Quantity				

FY02 - Participated in selected fleet exercises and demonstrations
FY03 - Participate in selected fleet exercises and demonstrations.
FY04 - Participate in selected fleet exercises and demonstrations.
FY05 - Participate in selected fleet exercises and demonstrations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) B. Accomplishments/Planned Program

High-Resolution Forecast Models	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.367	1.446	0.681	0.824
RDT&E Articles Quantity				

FY02 - Continued development of next generation high-resolution coupled air/ocean forecast models.
FY03 - Continue development of next generation high-resolution coupled air/ocean forecast models.
FY04 - Continue development of next generation high-resolution coupled air/ocean forecast models.
FY05 - Continue development of next generation high-resolution coupled air/ocean forecast models.

Basin Scale Ocean Models	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.370	1.363	1.100	1.260
RDT&E Articles Quantity				

FY02 - Continued development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
FY03 - Continue development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
FY04 - Continue development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements.
FY05 - Complete development of coastal and enclosed basin tactical scale oceanographic models for selected geographical locations in response to emergent requirements. Spiral development of coupled air/ocean models for selected geographical locations in response to emergent requirements.

Data Assimilation	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.105	1.120	0.327	0.410
RDT&E Articles Quantity				

FY02 - Began development of new capabilities to assimilate and quality control METOC data from satellite sensors and conventional data sources using Artificial Intelligence techniques.
FY03 to FY05 - Continue development of new capabilities to assimilate and quality control METOC data from satellite sensors and conventional data sources using Artificial Intelligence techniques.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) B. Accomplishments/Planned Program

Automated Objective Processing	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.375	1.540	1.124	0.976
RDT&E Articles Quantity				

FY02 - Continued development of techniques for bathymetry and surf zone and high-resolution micro-topography algorithms and automated objective processing in the littoral.
FY03 - Continue development of techniques for bathymetry and surf zone and high-resolution micro-topography algorithms and automated objective processing in the littoral.
FY04 - Complete development of techniques for bathymetry and surf zone and high-resolution micro-topography algorithms and automated objective processing in the littoral. Spiral development of assimilation methods for high-resolution surf zone bathymetry into coupled air/ocean forecast models and automated objective preocessing in the littoral.
FY05 - Continue development of assimilation methods for high-resolution surf zone bathymetry into coupled air/ocean forecast models.

Tide/Surf Data Visualization	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.260			
RDT&E Articles Quantity				

FY02 - Completed development of shipboard shallow water ocean circulation model, next generation tide and surf models, and automated graphical applications for tactical data visualization.

NEXGEN Acoustive Models	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.085	1.260	0.978	1.170
RDT&E Articles Quantity				

FY02 - Continued development of next-generation active and passive acoustic models.
FY03 - Continue development of next-generation active and passive acoustic models.
FY04 - Continue development of next-generation active and passive acoustic models.
FY05 - Continue development of next-generation active and passive acoustic models.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) B. Accomplishments/Planned Program

Shallow Water Acoustics	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.035	1.245	0.838	0.750
RDT&E Articles Quantity				

FY02 - Continued the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.
FY03 - Continue the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.
FY04 - Continue the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.
FY05 - Continue the development of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.

Fleet Applications and Data V&V	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.005	1.215	0.615	0.686
RDT&E Articles Quantity	velopment of mid-frequency bottom loss/bottom scatter models and databases for shallow water environments.			

FY02 - Continued the verification and validation of products and data assimilation techniques developed for fleet applications.
FY03 - Continue the verification and validation of products and data assimilation techniques developed for fleet applications.
FY04 - Continue the verification and validation of products and data assimilation techniques developed for fleet applications.
FY05 - Continue the verification and validation of products and data assimilation techniques developed for fleet applications.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget	13.591	12.768		
Current BES/President's Budget	12.829	12.479	7.222	7.966
Total Adjustments	-0.762	-0.289		
Summary of Adjustments				
Sec. 313. PL 107-206: Revised Economic Assumption	(0.029)			
Business Process Reform (SEC. 8100)		(0.051)		
Economic Assumptions (SEC. 8135)	(0.037)	(0.072)		
IT Cost Growth (SEC. 8109)		(0.023)		
FY03 FFRDC reduction Sec. 8029, P.L. 107-248		(0.008)		
Miscellaneous Department Adjustments	(0.429)	(0.135)		
Sec 8123: Management Reform Inititative	(0.120)			
FY 2002 SBIR	(0.147)			
Subtotal	-0.762	-0.289		

(U) Schedule:

Not applicable.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2342 METOC Data Assimilation and Modeling

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable.

(U) E. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies to support the meteorological and oceanographic (METOC) Data Assimilation Project which is a multi-faceted program which includes: 1) development, demonstration and validation of atmospheric and oceanographic data assimilation techniques, forecast models, database management systems, and associated software for use in both mainframe and tactical scale computers; 2) other models, which focus on ocean thermal structure and circulation, and surf and tide prediction; 3) techniques to process and manage satellite remotely-sensed environmental data at Oceanography Centers ashore and on ships equipped with the AN/SMQ-11 satellite receiver/recorder; and, 4) a family of acoustic system performance models beginning with active system models and databases in the low-, mid-, and high-frequency regimes and culminating with high fidelity simulation products, all with management oversight by SPAWAR.

(U) F. MAJOR PERFORMERS:

N/A

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME X2342 METOC Data Assimilation and Modeling						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NRL	35.550	9.619	N/A	5.654	N/A	6.363	N/A	CONT	CONT	
	WX	NAWC-WD, Pax	1.335	0.000	N/A	0.185	N/A	0.208	N/A	CONT	CONT	
	PD	APL	0.290	0.487	N/A	0.208	N/A	0.290	N/A	CONT	CONT	
	Grant	Univ. S. Miss.	2.413	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	CP	Neptune	0.381	0.325	N/A	0.295	N/A	0.325	N/A	CONT	CONT	
	CP	New Age	0.400	0.000	N/A	0.300	N/A	0.325	N/A	CONT	CONT	
	N/A	MISC	9.589	2.048	N/A	0.580	N/A	0.455	N/A	CONT	CONT	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Software Development			49.958	12.479		7.222		7.966		CONT	CONT	
Remarks:												
Systems Engineering	CP	SSA	0.295	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.295	0.000		0.000		0.000		CONT	CONT	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2342 METOC Data Assimilation and Modeling						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											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			50.253	12.479		7.222		7.966		CONT	CONT	
Remarks:												

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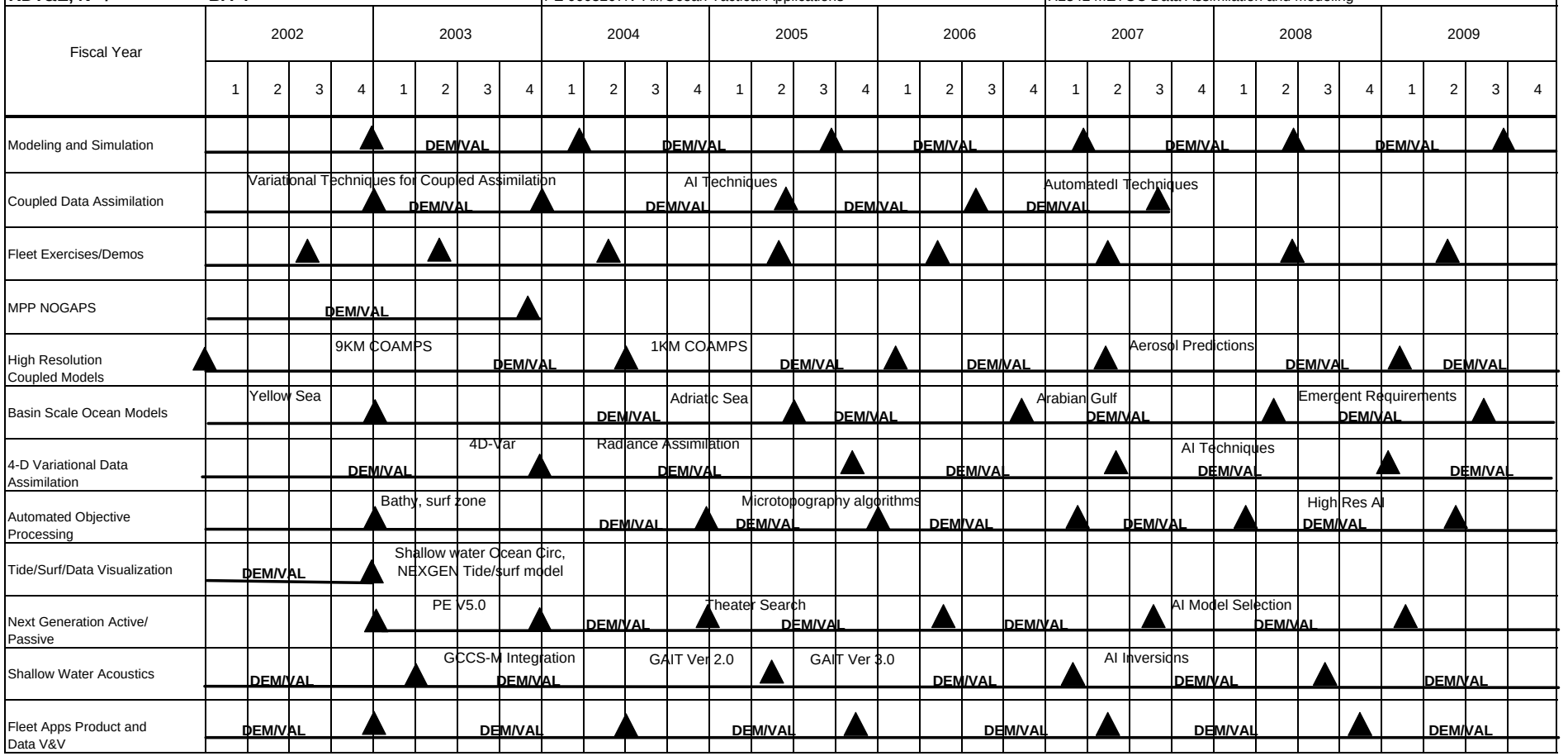
CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: X2342 METOC Data Assimilation and Modeling



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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2342 METOC Data Assimilation and Modeling			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Modeling and Simulation	4Q		1Q	3Q		1Q	2Q	3Q
Coupled Data Assimilation	4Q	4Q		2Q	3Q	3Q		
Fleet Exercises/Demonstrations	3Q	2Q	2Q	2Q	2Q	2Q	2Q	2Q
MPP NOGAPS		4Q						
High-Resolution Coupled Models	1Q		2Q		1Q	2Q		1Q
Basin Scale Ocean Models	4Q			2Q	4Q		2Q	3Q
4D-VAR Data Assimilation		4Q		4Q		2Q		1Q
Automated Objective Processing	4Q		4Q	4Q		1Q	1Q	2Q
Tide/Surf/Data Visualization	4Q							
NEXGEN Active and Passive Acoustic Models	4Q	4Q	4Q		2Q	3Q		1Q
Shallow Water Acoustics		1Q		2Q		1Q	3Q	
Fleet Applications and Data V&V	4Q		2Q	4Q		2Q	4Q	

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications					PROJECT NUMBER AND NAME X2343 Tactical METOC Applications					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**21.615**	**7.606**	**8.068**	**6.553**	**7.120**	**7.318**	**8.857**	**9.022**	**9.189**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

(U) A. 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.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2343 Tactical METOC Applications

(U) B. Accomplishments/Planned Program

EM/EO Decision Aids	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.131	1.334	1.015	1.180
RDT&E Articles Quantity				

FY02 - Completed development of next generation Electro-optical decision aids. Continued development of an advanced electromagnetic propagation model incorporating artificial intelligence techniques.
FY03 -04 Continue development of an advanced electromagnetic propagation model incorporating artificial intelligence techniques. Continue spiral development of an advanced electro-optical decision aid incorporating artificial intelligence techniques.
FY05 - Complete development of an advanced electro-optical decision aid incorporating artificial intelligence techniques. Spiral development of next generation electromagnetic and electro-optical (EM/EO) performance prediction systems and applications.

Mine Littoral Warfare TDAs	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.648	2.664	2.244	2.307
RDT&E Articles Quantity				

FY02 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.
FY03-04 Continue 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.
FY05 - Complete the incorporation of prototype Mine Warfare tactical decision aids in baseline surface ship, air and submarine performance prediction systems. Spiral development to incorporate additional mine littoral warfare decision aids in applicable performance prediction systems. Continue to maximize littoral operation support by ensuring interoperability of system via existing Fleet communication mechanisms.

TDA COTS Visualization	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.625	1.795	1.356	1.562
RDT&E Articles Quantity				

FY02 - Continued to apply advanced COTS visualization techniques to facilitate operator understanding of complex littoral environmental effects on sensor performance and integrated into appropriate platform ADMs. Performed at-sea evaluation of new capabilities.
FY03-04 - 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.
FY05 - Complete the application of advanced COTS visualization techniques to facilitate operator understanding of complex littoral environmental effects on sensor performance. Spiral development of multi-dimensional TDA COTS visualization techniques and integrate into appropriate platform ADMs. Perform at-sea evaluation of new capabilities.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2343 Tactical METOC Applications

(U) B. Accomplishments/Planned Program

Platform Vulnerability	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.115	1.125	0.988	1.000
RDT&E Articles Quantity				

FY02 - 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. Evaluate functionality during at-sea tests.
FY03-05 - 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.

Sensor Interface Capabilities	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.087	1.150	0.950	1.071
RDT&E Articles Quantity				

FY02 - 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. Implement in the platform ADMs and evaluate at-sea.
FY03 - 05 - 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2343 Tactical METOC Applications

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget	8.056	8.255		
Current BES/President's Budget	7.606	8.068	6.553	7.120
Total Adjustments	-0.450	-0.187		
Summary of Adjustments				
Sec. 313. PL 107-206: Revised Economic Assumption	(0.017)	-		
Business Process Reform (SEC. 8100)	-	(0.033)		
Economic Assumptions (SEC. 8135)	(0.022)	(0.046)		
IT Cost Growth (SEC. 8109)	-	(0.015)		
FY2002 SBIR	(0.195)	-		
Sec 8123: Management Reform Initiative	(0.071)	-		
FY03 FFRDC reduction Sec. 8029, P.L. 107-248	-	(0.005)		
Miscellaneous Department Adjustments	(0.145)	(0.088)		
Subtotal	-0.450	-0.187	0.000	0.000

(U) Schedule:

Not applicable.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2343 Tactical METOC Applications

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

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

(U) E. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the METOC Data Applications project to continue the development of state-of-the-art software capabilities that provide sensor, communication, and weapon system performance assessments across the full spectrum of open ocean and littoral operating environments, meteorology and oceanography , all with management oversight by SPAWAR Headquarters PMW 155.

(U) F. MAJOR PERFORMERS:

N/A

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME X2343 Tactical METOC Applications						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NUWC	1.400	0.000	N/A	0.000	N/A	0.000	N/A		1.400	
	WX	SSC SD	1.855	0.600	N/A	0.320	N/A	0.335	N/A	CONT	CONT	
	WX	NRL	1.079	0.412	N/A	0.270	N/A	0.285	N/A	CONT	CONT	
	CP	NAVSEA	19.200	6.155	N/A	5.258	N/A	6.211	N/A	CONT	CONT	
	CP	LOCKHEAD	1.053	0.000	N/A	0.000	N/A	0.000	N/A		1.053	
	N/A	MISC	4.223	0.901	N/A	0.705	N/A	0.289	N/A	CONT	CONT	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			28.810	8.068		6.553		7.120		0.000	50.551	
Remarks:												
	CP	IPD	0.595	0.000	N/A	0.000	N/A	0.000	N/A	CONT	#VALUE!	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.595	0.000		0.000		0.000		CONT	CONT	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2343 Tactical METOC Applications						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											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			29.405	8.068		6.553		7.120		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 35

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: X2343 Tactical METOC Applications

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EM/EO Decision Aids		EOTDA				AREPS				TAWS				Adv EM/EO using AI								Next Gen EM/EO Adv EM/EO using AI										
		DEM/VAL				**DEM/VAL**				**DEM/VAL**				**DEM/VAL**												**DEM/VAL**						
Mine Warfare TDAs		MEDAL								MEDAL Upgrades				MEDAL Upgrades								NEXGEN MIW TDA										
				DEM/VAL								**DEM/VAL**				**DEM/VAL**								**DEM/VAL**				**DEM/VAL**				
TDA COTS Visualization		3D VIS				4D VIS								Advanced VIS								Advanced Interactive Holographic Techniques										
						DEM/VAL								**DEM/VAL**				**DEM/VAL**				**DEM/VAL**							**DEM/VAL**				
Platform Vulnerability		Surface Ship Vul				Acoustic Vul								Non-Acoustic Vul								Multi-Ship Vul								Remote Sensing		
										DEM/VAL								**DEM/VAL**				**DEM/VAL**										
Sensor Interface Capabilities		Real-time Monitoring								Conventional Measurements												Remote Sensing/Data Monitoring										
						DEM/VAL												**DEM/VAL**											**DEM/VAL**				

R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2343 Tactical METOC Applications			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
EM/EO Decision Aids	4Q	4Q	4Q		1Q			3Q
Mine/Littoral Warfare TDAs	3Q		1Q	2Q	3Q		1Q	2Q
TDA COTS Visualization		1Q	3Q	4Q	4Q		2Q	3Q
Platform Vulnerability	4Q		4Q		3Q		2Q	4Q
Sensor Interface Capabilities			1Q			1Q		3Q

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications					PROJECT NUMBER AND NAME X2344 Precise Timing and Astrometry					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**4.208**	**1.419**	**1.443**	**1.161**	**1.265**	**1.302**	**1.576**	**1.606**	**1.636**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

(U) A. 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.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2344 Precise Timing and Astrometry

(U) B. Accomplishments/Planned Program

Time Transfer	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.375	0.390	0.292	0.355
RDT&E Articles Quantity				

FY02 - Continued development of next-generation time transfer capabilities.
FY03 - Complete development of next-generation time transfer capabilities. Spiral development of time transfer techniques incorporating neural networks to improve accuracy.
FY04 to FY05 - Continue development of time transfer techniques incorporating neural networks to improve accuracy.

Earth Orientation	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.425	0.430	0.338	0.375
RDT&E Articles Quantity				

FY02 - Continued VLBI/GPS demonstration for earth orientation parameters.
FY03 -04 - Continue VLBI/GPS demonstration for earth orientation parameters.
FY05 - Complete VLBI/GPS demonstration for earth orientation parameters. Spiral development of next-generation earth orientation techniques.

Master Clock	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.619	0.623	0.531	0.535
RDT&E Articles Quantity				

FY02 - Continued exploitation of emergent Master Clock technologies.
FY03 - FY05 - Continue exploitation of emergent Master Clock technologies.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2344 Precise Timing and Astrometry

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget	1.505	1.476		
Current BES/President's Budget	1.419	1.443	1.161	1.265
Total Adjustments	-0.086	-0.033		
Summary of Adjustments				
Sec. 313. PL 107-206: Revised Economic Assumption	(0.003)			
Business Process Reform (SEC. 8100)		(0.006)		
Economic Assumptions (SEC. 8135)	(0.004)	(0.008)		
IT Cost Growth (SEC. 8109)		(0.003)		
FY02 Actuals (30 Sept)				
Sec 8123: Management Reform Initiative	(0.013)			
FY2002 SBIR	(0.039)			
Miscellaneous Department Adjustments	(0.027)	(0.016)		
Subtotal	-0.086	-0.033	0.000	0.000

(U) Schedule:

Not applicable.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X2344 Precise Timing and Astrometry

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable.

(U) E. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the the Precise Timing and Astrometry Project in direct support of the U.S. Naval Observatory (USNO) in: 1) addressing DoD requirements for needed increases in positioning accuracies of modern weapons systems by the determination of star positions and the stellar inertial reference system ; 2) developing techniques for the prediction of the Earth's instantaneous orientation with respect to the stellar inertial reference system; 3) overseeing the determination and dissemination of precise time information using the Navy/DoD Master Clock System and precise time distribution networks; and, 4) developing advanced electronic light detectors and interferometry in the optical and infrared wavelength regions for very precise determination of the positions of both faint and bright stars, satellite tracking, and space debris studies, all with management oversight by SPAWAR Headquarters.

(U) F. MAJOR PERFORMERS:

N/A

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2344 Precise Timing and Astrometry						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	Naval Observatory	5.567	1.443	N/A	1.161	N/A	1.265	N/A	CONT	CONT	
	N/A	MISC	0.094	0.000	N/A	0.000	N/A	0.000	N/A		0.094	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Software Development			5.661	1.443		1.161		1.265		0.000	9.530	
Remarks:												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		CONT	CONT	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications			PROJECT NUMBER AND NAME X2344 Precise Timing and Astrometry							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											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			5.661	1.443		1.161		1.265		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 35

EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: PE 0603207N Air/Ocean Tactical Applications

PROJECT NUMBER AND NAME: X2344 Precise Timing and Astrometry

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Time Transfer		GPS time transfer				**DEM/VAL**		▲		Neural Networks				**DEM/VAL**		▲					Advanced Time Transfer					**DEM/VAL**				▲		
Earth Orientation			VLBI/GPS demo				**DEM/VAL**				▲		Full-Sky Astrometric Mapping Explorer										**DEM/VAL**			▲						
Master Clock	Cesium Evaluation			**DEM/VAL**		▲	Sigma Tau-model hydrogen masers							**DEM/VAL**			▲	Mercury Ion Clocks				**DEM/VAL**			▲		Pulsar Profile Technology					

R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X2344 Precise Timing and Astrometry			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Time Transfer		4Q		4Q				2Q
Earth Orientation			4Q				2Q	
Master Clock		2Q			1Q		1Q	

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications					PROJECT NUMBER AND NAME X9168 Prototype Regional Forecast Hub					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.000**	**0.000**	**1.223**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**1.223**
RDT&E Articles Qty											**0**

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

The thrust of this project is to develop, integrate and demonstrate a prototype Prototype Regionsal Forecast (PRF) Hub. Currently there is no Regional Forecast Hub for METOC modeling in support of the CNMOC Centers of Excellence. This system will provide the tools for substantially reducing the time to develop, prototype, test, and validate METOC models, and will support collaboration between modelers and users. The PRF will integrate and demonstrate new technologies and techniques to allow the Navy to establish more efficient forecasting hubs to respond to geographically distributed operational needs of the Department of the Navy including air and water born contaminants. The PRF will:

· Provide Navy's operational personnel and forecasters at dispersed locations with Web based access to regionally specific numerical forecasts of both the oceanographic and meteorological conditions.

· Incorporate computer models, high performance computing, including hardware, software and databases, and communications into a single architecture.

· Use advanced communications technology such as the NCSA Access Grid to allow forecasters and decision support personal to meet in a virtual room with collaborative access to the latest METOC conditions and forecasts.

· Integrate a suite of high-resolution ocean and atmospheric forecast and contaminant dispersion/ transport models. The SRC will require the development and incorporation of an adaptive refinement ocean model with chemical tracking capabilities.

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X9168 Prototype Regional Forecast Hub

(U) B. Accomplishments/Planned Program

Prototype Regional Forecast Hub	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.223		
RDT&E Articles Quantity				

FY03 - Development, integration and demonstration of a prototype PRF Hub.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X9168 Prototype Regional Forecast Hub

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	0.000	0.000	0.000	0.000
Current BES/President's Budget	0.000	1.223	0.000	0.000
Total Adjustments	0.000	1.223	0.000	0.000
Summary of Adjustments				
Prototype Regional Forecast Hub	-	1.250	-	-
Economic Assumptions (SEC. 8135)	-	(0.007)	-	-
IT Cost Growth (SEC. 8109)	-	(0.002)	-	-
Miscellaneous Department Adjustments	-	(0.013)	-	-
Business Process Reform (Sec. 8100)		(0.005)		
Subtotal	0.000	1.223	0.000	0.000

(U) Schedule:

Not applicable.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603207N Air/Ocean Tactical Applications	X9168 Prototype Regional Forecast Hub

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name

Not applicable.

(U) E. ACQUISITION STRATEGY:

Acquisition, management and contracting strategies are to support the Prototype Regional Forecast Hub. The PRF Hub will integrate and demonstrate new technologies and techniques to allow the Navy to establish more efficient forecasting hubs to respond to geographically distributed operational needs of the Department of the Navy including air and water born contaminants.

(U) F. MAJOR PERFORMERS:

N/A

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X9168 Prototype Regional Forecast Hub						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WX	NAVOCEANO	0.000	1.223	N/A	0.000	N/A	0.000	N/A	0.000	1.223	
	N/A	MISC	0.000	0.000	N/A	0.000	N/A	0.000	N/A		0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Software Development			0.000	1.223		0.000		0.000		0.000	1.223	
Remarks:												
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 35

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X9168 Prototype Regional Forecast Hub						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
											0.000	
											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			0.000	1.223		0.000		0.000		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 35

EXHIBIT R4, Schedule Profile																																DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME PE 0603207N Air/Ocean Tactical Applications														PROJECT NUMBER AND NAME X9168 Prototype Regional Forecast Hub											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prototype Regional Forecast Hub					DEMVAL																											

R-1 SHOPPING LIST - Item No. 35

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603207N Air/Ocean Tactical Applications				PROJECT NUMBER AND NAME X9168 Prototype Regional Forecast Hub			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Regional Forecast Hub		4Q						

R-1 SHOPPING LIST - Item No. 35

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**29.108**	**20.378**	**6.809**	**5.921**	**6.011**	**6.458**	**6.579**	**6.702**
A3040 TADIRCM	**14.298**							
W0584 Aircrew Protective Clothing and Devices	**2.927**	**2.831**	**2.870**	**2.444**	**2.474**	**2.503**	**2.549**	**2.596**
W0591 Aircraft Survivability, Vulnerabilty and Safety	**1.802**	**1.817**	**1.829**	**1.553**	**1.575**	**1.600**	**1.632**	**1.661**
W0592 A/C & Ordnance Safety	**1.683**	**1.733**	**1.362**	**1.247**	**1.271**	**1.525**	**1.553**	**1.582**
W1819 Carrier Vehicle Aircraft Fire Suppression	**0.984**	**0.941**	**0.748**	**0.677**	**0.691**	**0.830**	**0.845**	**0.863**
W9034 Modular Helmet and Display Development	**1.962**	**1.467**						
W9035 JPALS	**5.452**							
W9169 Aviation Integrated Life Support System		**5.134**						
W9170 Modular Advanced Vision System		**1.761**						
W9171 Naval Aviation Network Centric		**1.761**						
W9172 Advanced Aircraft/Explosion Protection		**0.977**						
W9173 Rotorcraft External Airbag		**1.956**						

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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability

(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. Project W9169 reflects a Congressional Add that will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals. Project W9170 reflects a Congressional Add that will support the shift from traditional cathode ray tube (CRT) based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored. Project W9171 reflects a Congressional Add that will provide support to the principles of network centric warfare (NCW) which will be applied to leverage the power of shared information and knowledge to deliver end-to-end combat capabilities spanning from Space-to-Seabed and Sea-to-Land. Project W9172 reflects a Congressional Add that will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory. Project W9173 reflects a Congressional Add that will address the level of protection afforded and feasibility of an external airbag. Rotorcraft application will require larger airbags integrated into the aircraft and development of “predictive” crash sensors. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway.

* See P.E. 0603860N W2329 for R-2a and R3 details.

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
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)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**2.927**	**2.831**	**2.870**	**2.444**	**2.474**	**2.503**	**2.549**	**2.596**
RDT&E Articles Qty								

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Avation Survivability	W0584 Aircrew Protective Clothing and Devices

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.327	1.314	1.417	1.132
RDT&E Articles Quantity				

Advanced Integrated Life Support System (AILSS) program. Exercise option to begin the development of frequency Agile flight worthy unity magnification goggles (laser eye protection). Laboratory and field testing of Agile flight worthy goggles prototypes. Focus on alternative materials and optical design to maximize performance. Finalize unity magnification frequency Agile flight worthy goggles and ready for EMD transition. Integrate Smart Advanced Integrated Life Support System (SAILSS) with on-board oxygen and personal air conditioning systems. Integration of SAILSS with focus on imbedded microsensors and personal air conditioning system. Tactical variant of AILSS (TAILSS), move SAILSS into final phases of laboratory testing. Crewstation technology laboratory demonstration of Active Network Guidance Emergency Logic (ANGEL). System integration laboratory demonstration of ANGEL. Combine flight testing of on board/off board data correlation and ANGEL.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.600	1.517	1.453	1.312
RDT&E Articles Quantity				

Advanced Technology Crew Station (ATCS) program. System integration and flight testing of Advanced Helmet Vision System enhanced resolution Crusader. I2/Thermal mode control studies. Pilot Vehicle Interface (PVI) on-board/off board data correlation on test aircraft and began flight testing. Advanced Technology Escape System (ATES) ejection seat trajectory and crashworthy seat stroke models with biodynamic models exploring various integrated aircrew head/neck protection configurations for ejection safe helmet mounted systems. . Incorporate computational fluid dynamics and parachute models. Preliminary ergonomic seating design, validated BioRID performance and mature final version. Incorporate models of helmet mounted displays into the PVI to support testing and validation of on board/off board data correlation. Horizontal accelerator/vibrating platform assessment of ergonomics, posture, and crashworthiness. Development of Charge Coupled Device (CCD) based, high resolution Advanced Helmet Vision System (follow on to the low resolution Crusader HMD). Integrate results of injury prevention research into protective equipment to include helmet mounted devices and into ejection seat design for improved seal performance, retention, and safety. Development and testing of side facing seat and improved restraint system. Focus on shock and vibration work.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0584 Aircrew Protective Clothing and Devices

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	2.850	2.895	2.964	2.519
Current BES/President's Budget	2.927	2.831	2.870	2.444
Total Adjustments	0.077	-0.064	-0.094	-0.075
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.017		
Congressional rescissions	-0.006			
SBIR/STTR Transfer	-0.010			
Economic Assumptions	-0.008	-0.047	-0.085	-0.065
Other Navy/OSD Adjustments		0.000	-0.009	-0.010
Reprogrammings	0.101			
Congressional increases				
Subtotal	0.077	-0.064	-0.094	-0.075

Schedule:

Not Applicable

Technical:

INot Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0584 Aircrew Protective Clothing and Devices

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

(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)

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 336

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **Feburary 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	NAWCAD PAX	19.342	1.137	Various	1.290	Various	1.101	Various	Continuing	Continuing	
Systems Engineering	Various	Various	10.765	0.150							10.915	
Systems Engineering	C/CPFF	McDonnell Douglas, St Louis	1.325								1.325	1.325
Systems Engineering	C/CPFF	Boeing Seattle, Wa	1.660								1.660	1.660
Subtotal Product Development			33.092	1.287		1.290		1.101		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management	Various	Various	1.986	0.519	Various	0.531	Various	0.451	Various	Continuing	Continuing	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			1.986	0.519		0.531		0.451		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	15.856	1.015	Various	1.039	Various	0.882	Various	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			15.856	1.015		1.039		0.882		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River	0.105	0.010	10/02	0.010	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.105	0.010		0.010		0.010		Continuing	Continuing	
Remarks:												
Total Cost			51.039	2.831		2.870		2.444		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																																DATE: **February 2003**
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										
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Program Milestones																																
Agile Laser Eye Protection																																
Unity Magnification Goggle																																
Intensified Unity Mag Goggle																																
Advance Helmet Vision System (AHVS)																																
Crusader																																
Visually Coupled Display (high resolution)																																
Adanced Integrated Life Support System (AILSS)																																
Tactical AILSS (TAILSS)																																
Smart AILSS (SAILSS)																																
4th Generation Escape																																
Crashworthiness & Improved Restraint System																																
Injury Prevention																																
Pilot Vehicle Interface (PVI)																																
On Board - Off Board Data Correlation																																
T&E Milestones																																
Crusader laboratory testing																																
ANGEL																																
Advanced Technology Crew Station (ATCS)																																

R-1 SHOPPING LIST - Item No. 3236

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603216N				PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Technology Crew Station (ATCS)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Agile Laser Eye Protection								
Unity Magnification Goggle	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Intensified Unity Mag Goggle				3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Advanced Helmet Vision System (AHVS)								
Crusader	1Q-4Q	1Q-4Q	1Q-4Q					
Visually Coupled Display (high resolution)		1Q-4Q	1Q-4Q	1Q				
Advanced Integrated Life Support System (AILSS)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Tactical AILSS (TAILSS	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q				
Smart AILSS (SAILSS)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
4th Generation Escape	1Q-4Q							
Crashworthiness & Improved Restraint System	1Q-4Q	1Q-4Q						
Injury Prevention		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Pilot Vehicle Interface (PVI)								
On Board - Off Board Data Correlation	1Q-4Q	1Q-4Q						
Crusader laboratory testing	3Q-4Q	1Q-4Q						
ANGEL	3Q-4Q	1Q-4Q	1Q-4Q	1Q				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.802**	**1.817**	**1.829**	**1.553**	**1.575**	**1.600**	**1.632**	**1.661**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability, Vulnerability and Safety

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.319	1.361	0.100	0.000
RDT&E Articles Quantity				

Unmanned Aerial Vehicles (UAV) Survivability Enhancement Program (SEP):
This program will develop and test survivability enhancements for UAV platforms. Included are Advanced Insulated Exhaust Systems, Situational Awareness Systems, Self-sealing polymers, and acoustic signature reduction.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.183	0.154	1.329	1.178
RDT&E Articles Quantity				

Transport/Reconnaissance Survivability Enhancement Program (TR/SEP):
This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for transport and reconnaissance aircraft to include KC-130J, P-3/MMA, E-6B and others. FY 02/03 work will determine system requirements and technology suitable for demonstration. Fabrication, integration and test will occur in FY 04/05.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.200	0.250	0.000	0.000
RDT&E Articles Quantity				

Advanced Fire Protection:
This program leverages from the Next Generation Propellant Program by demonstrating that previously developed fire suppression chemicals can be slightly modified and loaded into existing F/A-18 fire suppression canisters to provide ballistic fire protection. The final product will be a fire protection canister that will be tested in the V-22 and F/A-18 to demonstrate commonality and survivability.

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability, Vulnerability and Safety

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.100	0.027	0.200	0.150
RDT&E Articles Quantity				

Advanced Threats:
This program will assess the vulnerability of USN/USMC aircraft materials and sensors to low-level laser, high level laser and high power microwave threats (FY 02-FY-04). In FY 04, the advanced 35mm threat will be assessed.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.025	0.000	0.025
RDT&E Articles Quantity				

Biannual Update of R&D Master Plan:
Supports outyear aircraft survivability R&D requirements.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.100	0.150
RDT&E Articles Quantity				

Rotorcraft Survivability Enhancement Program:
This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for rotorcraft to include H-1 variants, H-53, H-60 and V-22. FY 04/05 work will determine system requirements and technology suitable for demonstration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability, Vulnerability and Safety

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			0.100	0.050
RDT&E Articles Quantity				

Survivability Analysis Methodology Update:
This program will update USN/USMC Vulveratility models (Computation of Vulnerable Area and Repair Time (COVART)), Advanced Joint Effectiveness Model (AJEM) to ensure the most up to date analysis tools. This will include updating component probability of kill (PK) data as necessary and will assess conversion methodologies such as Pro/engineer (PRO/E) Computer Aided Design (CAD) model conversion to Facet Generator (FASTGEN) used to show ballistic shot lines.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability, Vulnerability and Safety

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.876	1.857	1.884	1.593
Current BES/President's Budget	1.802	1.817	1.829	1.553
Total Adjustments	-0.074	-0.040	-0.055	-0.040
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions	-0.004	-0.010		
SBIR/STTR Transfer	-0.028			
Economic Assumptions	-0.005	-0.030	-0.053	-0.039
Reprogrammings	-0.037			
Other Navy/OSD Adjustments			-0.002	-0.001
Congressional increases				
Subtotal	-0.074	-0.040	-0.055	-0.040

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability , Vulnerability and Safety

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)
PE 0603384D (Chemical/Biological Defense (Advanced Development))

E. ACQUISITION STRATEGY: *

Not applicable

F. MAJOR PERFORMERS: **

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Sikorsky, Connecticut	3.113								3.113	3.113
Primary Hardware Development	TBD	Contractor TBD (UAV)	0.885	0.677	10/02						1.562	1.562
Primary Hardware Development	WX	Various Govt Activities	0.050	0.150	10/02	0.473	10/03				0.673	
Systems Engineering	WX	Various	7.103	0.420	10/02	0.250	10/03	0.492	10/04	Continuing	Continuing	
Primary Hardware Development	SS/CPFF	Bell Helicopter	1.307								1.307	1.307
Primary Hardware Development	SS/CPFF	TBD (TR/SEP)				0.896	11/03	0.269	11/04		1.165	1.165
Subtotal Product Development			12.458	1.247		1.619		0.761		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data	WX	Various	0.254	0.025	11/02						0.279	
Studies & Analyses	CPFF	TBD				0.150	11/03	0.075	11/04		0.225	0.225
GFE												
Award Fees												
Subtotal Support			0.254	0.025		0.150		0.075			0.504	
Remarks:												

CLASSIFICATION:

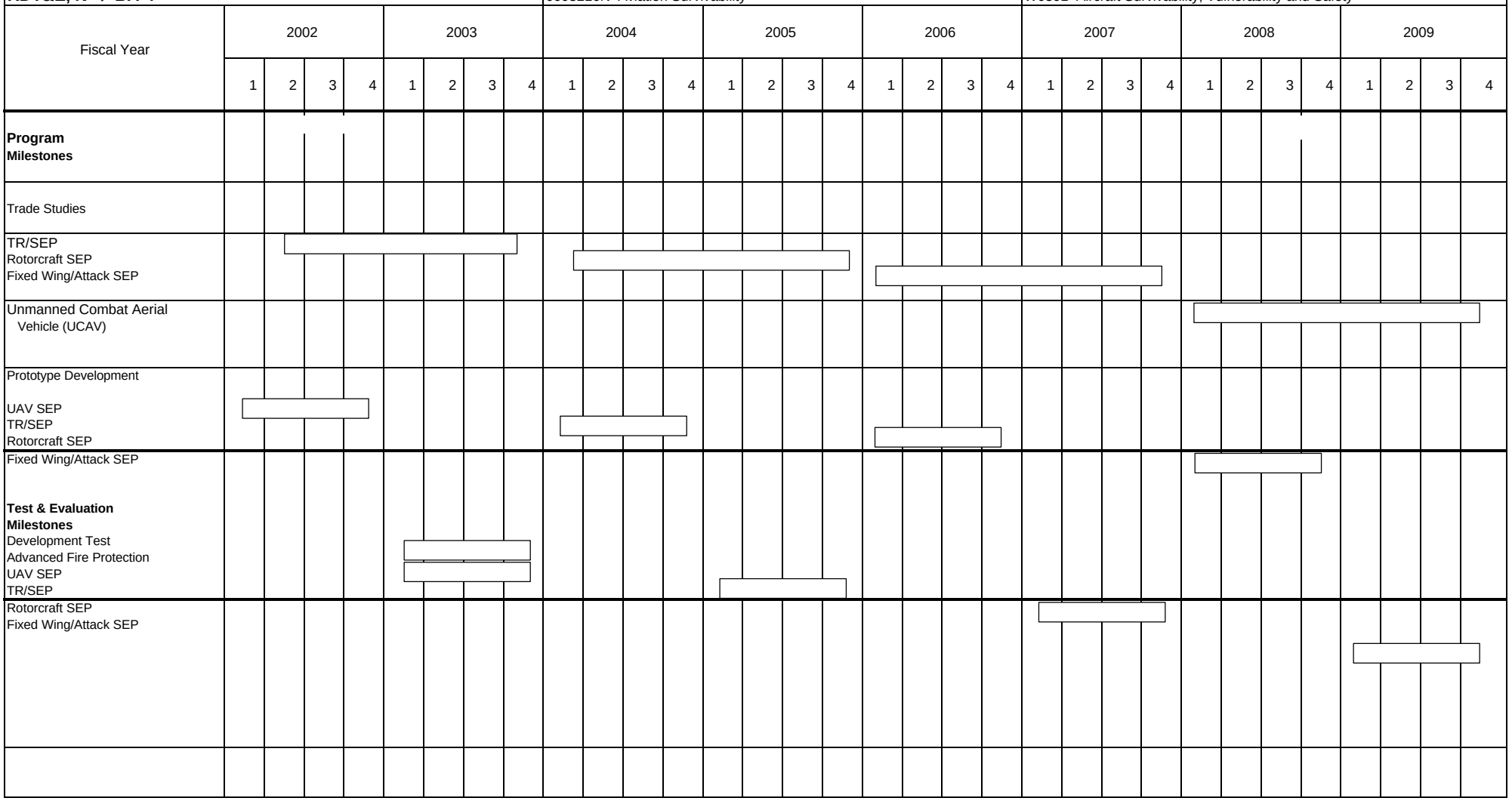
Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	Various	1.598	0.500	10/02			0.657	10/04	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			1.598	0.500				0.657		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WX	Various										
Program Management Support	WX	Various	0.035	0.035	10/02	0.050	10/03	0.050	10/04	Continuing	Continuing	
Travel	WX	Various	0.205	0.010	10/02	0.010	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.240	0.045		0.060		0.060		Continuing	Continuing	
Remarks:												
Total Cost			14.550	1.817		1.829		1.553		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W0591 Aircraft Survivability, Vulnerability and Safety



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Fire Protection System Design Review		1Q						
Advanced Fire Protection Ballistic Tests		2-4Q						
Advanced Fire Protection Test Report		4Q						
UAV/SEP Test Plan Review	1Q							
UAV/SEP Ground/Flight Tests		1Q						
UAV/SEP Integration Report		3Q						
TR/SEP Tech Demo Downselect	2Q							
TR/SEP System Design Review			1Q					
TR/SEP Test Plan Review			3Q					
TR/SEP Ground/Flight Tests				1Q				
TR/SEP Integration Report				4Q				
Advanced Threats Low Level Laser/RF Weapons Report		4Q						
Advanced Threats High Power Laser Report			3Q					
Advanced Threats 35mm Component Test Report				4Q				
Survivability Master Plan Update Reports		4Q		4Q		4Q		4Q
Methodology Assessment-Platform Vulnerability Report			4Q					
Methodology Assessment-Component Probability of Kill (PK) Report				4Q				
Rotorcraft SEP Tech Demo Downselect			1Q					
Rotorcraft SEP System Design Review					1Q			
Rotorcraft SEP Test Plan Review					3Q			
Rotorcraft SEP Ground/Flight Tests						1Q		
Rotorcraft SEP Integration Report						4Q		
Fixed Wing/Attack SEP Tech Demo Downselect					1Q			
Fixed Wing/Attack SEP System Design Review							1Q	
Fixed Wing/Attack SEP Test Plan Review							3Q	
Fixed Wing/Attack SEP Ground/Flight Tests								1Q
Unmanned Combat Aerial Vehicle SEP Tech Demo Downselect							1Q	

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability				PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.683**	**1.733**	**1.362**	**1.247**	**1.271**	**1.525**	**1.553**	**1.582**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Aircraft and Ordnance Safety Program transitions transformational munitions technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603216N, Aviation Survivability	W0592, Aircraft & Ordnance Safety

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.419	0.337	0.000	0.000
RDT&E Articles Quantity				

REACTIVE MATERIALS:
Continue evaluating reactive material warheads for Insensitive Munitions (IM) compliance.

Output: IM characterization of warheads with reactive material components.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.566	0.375	0.264	0.000
RDT&E Articles Quantity				

SYMPATHETIC DETONATION PROTECTION:
Demonstrate pumice as a sympathetic detonation (SD) barrier for weapon shipping containers. Refine pumice design capability for SD mitigation.

Output: New modeling capabilities and demonstrated technology to reduce the threat of SD in Joint Stand-Off Weapon (JSOW) and General Purpose (GP) bomb Munitions.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.698	0.200	0.000	0.000
RDT&E Articles Quantity				

SIDEWINDER COMPOSITE ROCKET MOTOR DEMO:
Conduct ground and flight testing Sidewinder composite rocket motor. Conduct air to air missile IM warhead testing.

Output: IM warhead for air to air missile & Flight demo of composite case weapon airframe.

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603216N, Aviation Survivability	W0592, Aircraft & Ordnance Safety

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.600	0.379	0.000
RDT&E Articles Quantity				

COMPOSITE CASE IM DEMONSTRATION:
Conduct composite case Insensitive Munitions (IM) testing demonstration. Begin long range air to surface composite case IM demonstration.

Output: Flight demo of composite case weapon airframe for air to air/ground missile.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.221	0.277	0.514
RDT&E Articles Quantity				

AIR TO AIR MISSILE PROPULSION SYSTEM DEMO/TESTING:
Conduct improved air to air missile demonstration and testing.

Output: baseline IM performance of air breathing systems.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.265	0.362
RDT&E Articles Quantity				

SHOCK/BLAST BARRIER PROTECTION DEMO/TESTING:
Conduct shock/blast protection demonstration and testing.

Output: Design and demonstration of shock absorbent materials for the protection of weapons and weapon platforms.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603216N, Aviation Survivability	W0592, Aircraft & Ordnance Safety

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.177	0.371
RDT&E Articles Quantity				

IMPROVED AIR LAUNCHED WEAPONS:
Demonstrate improved air launched munitions for force protection and homeland defense.

Output: Demonstrate/determine the IM and safety characteristics of improved air launched munitions.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N, Aviation Survivability	W0592, Aircraft & Ordnance Safety

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget	1.729	1.772	1.789	1.532
FY 2004 President's Budget	1.683	1.733	1.362	1.247
Total Adjustments	-0.046	-0.039	-0.427	-0.285
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions	0.011			
SBIR/STTR Transfer				
Economic Assumptions	-0.005	-0.029	-0.045	-0.036
Reprogrammings	-0.050			
Other Navy/OSD Adjustments	-0.002		-0.382	-0.249
Congressional increases				
Subtotal	-0.046	-0.039	-0.427	-0.285

Schedule: Not Applicable

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N, Aviation Survivability	W0592, Aircraft & Ordnance Safety

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

0604802A, Department of Army
0603609N, Conventional Munitions

E. ACQUISITION STRATEGY: *

The Aircraft and Ordnance Safety Project acquisition strategy consists of actions (technology transition) which are intended to assist the improvement of NAVAIR-cognizant munitions. Specific task planning involves close coordination with the PMAs, field activities, and the IM and IMAD offices. Primary considerations in planning address windows of opportunity within the overall system procurement/life cycle, including milestone II (E&MD), P3I, and PIP events. Munition system design elements involving IM response risk (existing or anticipated) are analyzed in relation to proven and available IM technologies applicable to improvements in those design elements. When it is established that a system con probably be improved by implementing new technology and a window of opportunity for transition is available, the greatest overall improvement in fleet safety regarding IM response risk is the final deciding factor used to prioritize task selection for funding from limited resources.

F. MAJOR PERFORMERS: **

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	NAWCWD China Lake	15.944	1.703	10/02	1.332	10/03	1.215	10/04	Continuing	Continuing	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			15.944	1.703		1.332		1.215		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.052								0.052	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.052	0.000		0.000		0.000		0.000	0.052	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCWD China Lake, CA	0.120	0.030	10/02	0.030	10/03	0.032	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.120	0.030		0.030		0.032		Continuing	Continuing	
Remarks:												
Total Cost			16.116	1.733		1.362		1.247		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

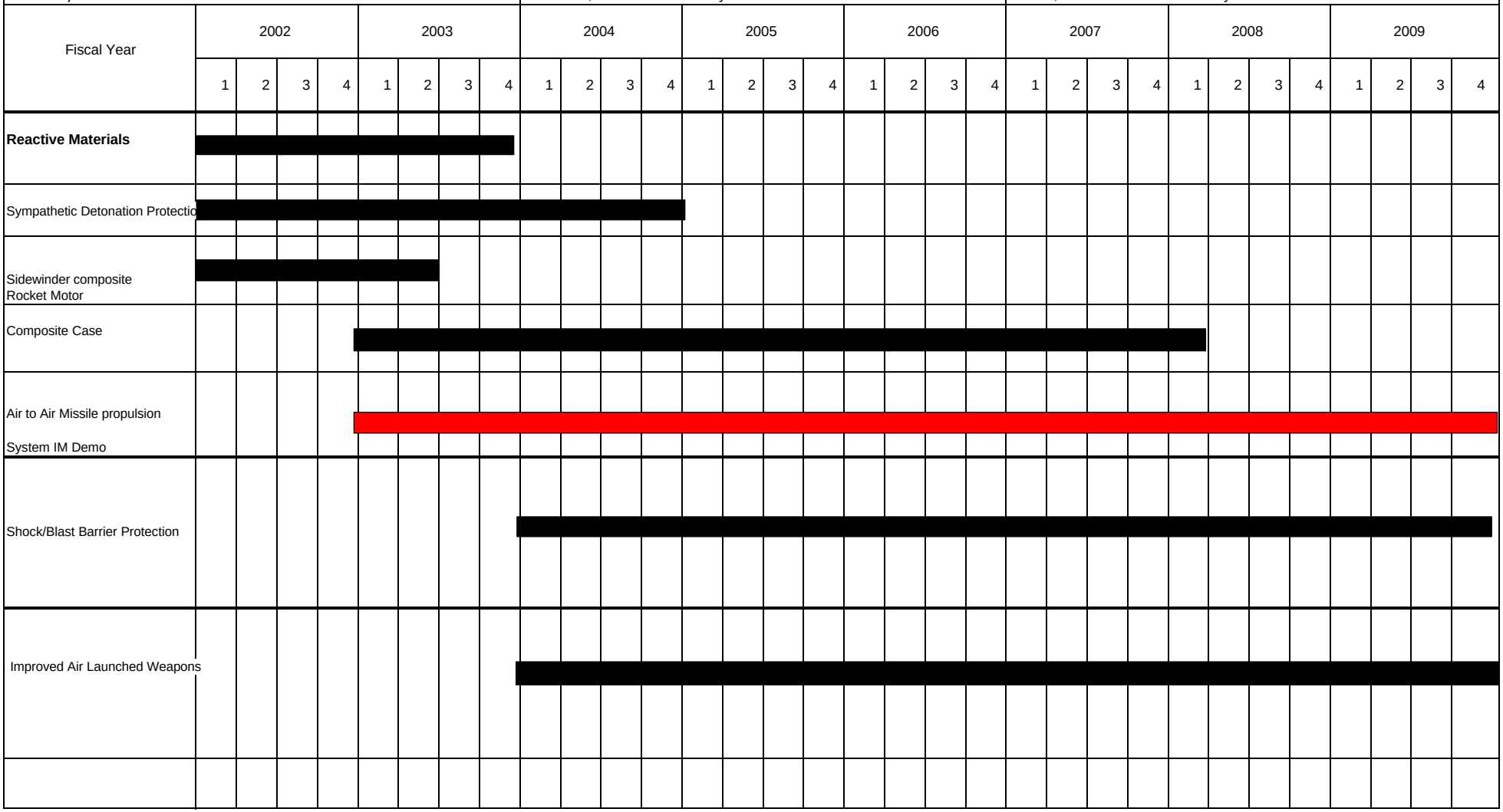
EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603216N, Aviation Survivability

PROJECT NUMBER AND NAME: W0592, Aircrfat & Ordnance Safety



R-1 SHOPPING LIST - Item No. 36

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603216N				PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Reactive Materials	1Q-4Q	1Q-4Q						
Sympathetic Detonation Protection	1Q-4Q	1Q-4Q	1Q-4Q					
Sidewinder composite Rocket Motor	1Q-4Q	1Q-4Q						
Composite Case		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Air to Air Missile Propulsion System Demo		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Shock/Blast Barrier Protection			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Improved Air Launched Weapons			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
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			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.984**	**0.941**	**0.748**	**0.677**	**0.691**	**0.830**	**0.845**	**0.863**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project develops improved fire fighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire fighter training improvements.

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W1819 Carrier Vehicle Fire Suppression System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.198	0.186	0.339	0.282
RDT&E Articles Quantity				

Fire Fighting Agents: Evaluate new or modified agents which adequately address changing agent restrictions or technical needs. Objective is to ensure that periodic, but unpredictable, restrictions on agent production or use, primarily driven by the environmental and toxicological fields, do not negatively impact fleet safety.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.475	0.491	0.180	0.254
RDT&E Articles Quantity				

Fire Fighting Systems: Evaluate system automation features and demonstrate enhancements to personnel protection equipment. Objective is to evaluate system hardware for effectiveness against updated fire threats.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.311	0.264	0.229	0.141
RDT&E Articles Quantity				

Fire Fighting Tactics: Evaluate reduced manning impact and resultant modifications to tactics. Provide opportunities for training during agent/system testing. Objective is to maintain emergency capabilities as reductions in manpower draw from available response crews.

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W1819 Carrier Vehicle Aircraft Fire Suppression System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.017	0.962	0.981	0.831
Current BES/President's Budget	0.984	0.941	0.748	0.677
Total Adjustments	-0.033	-0.021	-0.233	-0.154
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.006		
Congressional rescissions	-0.002			
SBIR/STTR Transfer	-0.007			
Economic Assumptions	-0.003	-0.015	-0.024	-0.019
Reprogrammings	-0.021			
Other Navy/OSD Adjustments			-0.209	-0.135
Congressional increases				
Subtotal	-0.033	-0.021	-0.233	-0.154

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
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

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not applicable										

E. ACQUISITION STRATEGY: *

Not applicable

F. MAJOR PERFORMERS: **

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9034 Modular Helmet and Dispay Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.962**	**1.467**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems..

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9034 Modular Helmet and Display Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.962	1.467		
RDT&E Articles Quantity				

Modular Helmet and Display Development

Development of the low resolution Crusader modular helmet. Development of the enhanced resolution variant to be entitlted Advanced Helmet Vision System (AHVS). Currently the system exists as a walk around demonstrator which will be missionized to support limited flight testing. Laboratory evaluation of Crusader final and prototype AHVS to include resolution, brightness, weight, center of gravity and moments of inertia.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9034 Modular Helmet and Display Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.982			
Current BES/President's Budget	1.962	1.467		
Total Adjustments	-0.020	1.467	0.000	0.000
Summary of Adjustments				
Congressional program reductions	-0.004			
Congressional undistributed reductions		-0.009		
Congressional rescissions				
SBIR/STTR Transfer	-0.015			
Economic Assumptions	-0.005	-0.024		
Reprogrammings	0.004			
Other Navy/OSD Adjustments				
Congressional increases		1.500		
Subtotal	-0.020	1.467	0.000	0.000

Schedule:

Not applicable

Technical:

Not applicable

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	W9034 Modular Helmet and Display Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.250	TBD						1.250	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	Miscellaneous	1.942	0.217	TBD						2.159	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			1.942	1.467		0.000		0.000		0.000	3.409	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River	0.020								0.020	
Transportation												
SBIR Assessment												
Subtotal Management			0.020	0.000		0.000		0.000			0.020	
Remarks:												
Total Cost			1.962	1.467		0.000		0.000			3.429	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**5.134**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Funding will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. The injury research is a multi pronged effort to collect data (cadaver), analyze said data, and develop the algorithms. The cadaver studies are conducted at host facilities, University of Virginia and Medical College of Wisconsin. Principal areas of study are the cervical and vertebral vertebrae (potential to address thoracic). The Quantitative Computed Tomography (QCT) studies occur posttest while composite studies of bone segments, soft tissue are conducted as required. This is an extremely labor intensive, controlled, costly protocol, but it is the only way to assess vertebral strength. This data is then supplemented with noninjurious human subject studies to assess fatigue effects, maximally exertion, and prolonged exertion/extension. Algorithm development is conducted predominantly in-house with some support from Southwest Research Insititute.

The integration with parallel CB variants of life support systems such as JSAM (Joint Service Air Mask) and JPACE (Joint Protective Aircrew Ensemble) requires significant clothing design, testing, and redesign. The principal support comes from Titan systems and Mustang survival. The testing consists of chemical agent attack under controlled conditions. The difficulty is how to ensure the wiring/sensors do not compromise the CB interfaces. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals, which will lead to proactive design refinement and reduce development costs.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9169 Aviation Integrated Life Support System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		5.134		
RDT&E Articles Quantity				

Aviation Integrated Life Support System

Funding will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9169 Aviation Integrated Life Support System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:				
Current BES/President's Budget		5.134		
Total Adjustments	0.000	5.134	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.031		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.085		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		5.250		
Subtotal	0.000	5.134	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 36

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	W9169 Aviation Integrated Life Support System

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		2.200	TBD						2.200	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		1.200	TBD						1.200	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	3.400		0.000		0.000		0.000	3.400	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management	TBD	TBD		0.140	TBD						0.140	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.140		0.000		0.000		0.000	0.140	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD		0.575	TBD						0.575	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.575		0.000		0.000		0.000	0.575	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	TBD	TBD		1.009	TBD						1.009	
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.010	TBD						0.010	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	1.019		0.000		0.000			1.019	
Remarks:												
Total Cost			0.000	5.134		0.000		0.000			5.134	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**1.761**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. The AHVS is comprised of two modules. The outer module is a binocular, multi-spectral (day, night, NVG, FLIR) visor upon which flight information and weapons symbology is projected. Communications equipment and oxygen mask are mounted to the inner module, which is custom fitted to each aircrew. The inner module (helmet) provides a stable platform upon which mission specific outer modules are attached. This concept reduces future development costs – designers would begin work from a stable, defined inner helmet platform with common attachment points. Separate helmet development would not be required for any future designs

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9170 Modular Advanced Vision System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.761		
RDT&E Articles Quantity				

Modular Advanced Vision System

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9170 Modular Advanced Vision System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:				
Current BES/President's Budget		1.761		
Total Adjustments	0.000	1.761	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.029		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.800		
Subtotal	0.000	1.761	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable.

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	W9170 Modular Advanced Vision System

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.370	TBD						1.370	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		0.261	TBD						0.261	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.631		0.000		0.000		0.000	1.631	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD		0.130	TBD						0.130	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.130		0.000		0.000		0.000	0.130	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	1.761		0.000		0.000			1.761	
Remarks:												

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis Modeling & Simula			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**1.761**						
RDT&E Articles Qty								

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

The principles of network centric warfare (NCW) will be applied to leverage the power of shared information and knowledge to deliver end-to-end combat capabilities spanning from Space-to-Seabed and Sea-to-Land. The aspect of human decision making within Naval Aviation is insufficiently addressed and viewed as one of the most critical issues in making NCW a quantum impact on future warfighting. This project will leverage the use of facilities funded from other R&D programs. This combination of four key facilities at NAS Patuxent River, MD: the Air Combat Environment Test & Evaluation Facility (ACETEF), the Ship Ground Station (SGS), the Crewstation Technology Lab (CTL) and the NCW Decision Support Center will raise the level of modeling and simulation from an engineering demonstration to a simulation of battles and missions with the added aspect of integrating and analyzing the human decision maker within the total system.

The funds will go toward the integration of the CTL, and the SGS with the previously integrated NAVAIR labs at Patuxent River, Maryland and link into the already-integrated NAVAIR labs and ranges at Point Mugu and China Lake in California. The integration of the CTL and SGS with ACETEF and the NCW Decision Support Center will facilitate the measurement and analysis of human systems integration factors in human-in-the-loop Unmanned Air Vehicle (UAV) control systems and weapon systems as they interoperate with Destroyers, Cruisers, and Aircraft Carriers in real-world operational situations that are consistent with the prescribed Defense Planning Guidance Scenarios. ACETEF will integrate hardware, models, and concepts into a virtual battlespace. The NCW Decision Support Center will allow senior leadership to be immersed in the operational scenario and visualize the net-centric operations of multiple platforms. The data yielded will be of Test & Evaluation quality and will, therefore support technical and operational assessments of the contributions that these NCW systems make to increased effective combat power.

In the final analysis, program results will influence warfare doctrine, tactics, operational tempo, and speed/accuracy of target acquisition.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.761		
RDT&E Articles Quantity				

-(U) ($0.300) Prepare Strategic Vision and Roadmap
-(U) ($0.261) Initiate Mission Capabilities Requirements Definition/Integration with Subject Matter Experts
-(U) ($1.200) Physically link and generate Software code to interconnect the NCW Decision Support Center (DSC), Ship Ground Station (SGS) and Crewstation Technology Lab (CTL) to the Air Combat Test & Evaluation Facility (ACTEF)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000			
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000			
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:				
Current BES/President's Budget		1.761		
Total Adjustments	0.000	1.761	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.029		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.800		
Subtotal	0.000	1.761	0.000	0.000

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Stimulation						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	CPFF	Various	0.000	0.400	04/03						0.400	0.400
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.400		0.000		0.000		0.000	0.400	
Remarks:												
Development Support												
Software Development	CPFF	Various	0.000	1.341	04/03						1.341	1.341
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	1.341		0.000		0.000		0.000	1.341	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Stimulation							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.020	TBD						0.020	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.020		0.000		0.000			0.020	
Remarks:												
Total Cost			0.000	1.761		0.000		0.000			1.761	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9172 Advanced Aircraft Explosion Protection			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**0.977**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Funding will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9172 Advanced Aircraft Explosion Protection

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.977		
RDT&E Articles Quantity				

Advanced Aircraft Explosion Protection
Funding will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9172 Advanced Aircraft Explosion Protection

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:				
Current BES/President's Budget		0.977		
Total Adjustments	0.000	0.977	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.006		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.017		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.000		
Subtotal	0.000	0.977	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 36

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	W9172 Advanced Aircraft Explosion Protection

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**1.956**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This effort will address the level of protection afforded and feasibility of an external airbag, and then to bring the capability to a production ready, aircraft fieldable status. While automotive airbag technology is relatively mature, this unique application will require much larger airbags, an aircraft structural integration approach for mounting the airbags in a maintainable manner, and the development of a "predictive" crash sensor. Initial impact studies (water and ground) have already been conducted.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9173 Rotorcraft External Airbag

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.956		
RDT&E Articles Quantity				

Rotorcraft External Airbag
This effort will address the level of protection afforded and feasibility of an external airbag. Rotorcraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603216N Aviation Survivability	W9173 Rotorcraft External Airbag

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:				
Current BES/President's Budget		1.956		
Total Adjustments	0.000	1.956	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.012		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.032		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		2.000		
Subtotal	0.000	1.956	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 36

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	W9173 Rotorcraft External Airbag

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.021	TBD						1.021	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		0.931	TBD						0.931	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.952		0.000		0.000		0.000	1.952	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.004	TBD						0.004	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.004		0.000		0.000			0.004	
Remarks:												
Total Cost			0.000	1.956		0.000		0.000			1.956	
Remarks:												

R-1 SHOPPING LIST - Item No. 36

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA 4**						R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**0.000**	**0.000**	**31.761**	**79.449**	**43.181**	**43.134**	**9.090**	**9.227**	**9.390**	**Continuing**	**Continuing**
X3050 Deployable Joint Command & Control	**0.000**	**0.000**	**31.761**	**79.449**	**43.181**	**43.134**	**9.090**	**9.227**	**9.390**	**Continuing**	**Continuing**
											0.000
											0.000
											0.000
											0.000
											0.000
Quantity of RDT&E Articles											**0**

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Deployable Joint Command and Control (DJC2) seeks to provide standing, and standardized, joint command and control (C2) systems that can be deployed by Regional Combat Commanders (RCCs) or Joint Task Force (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 the new Standing Joint Forces Headquarters (SJFHQ) concept and doctrine being developed by Joint Forces Command in coordination with other RCCs and the Joint Staff, as tasked by Defense Planning Guidance (DPG). RCC 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 RCC and JTF mission requirements. This capability must be interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

The RDT&E line supports an evolutionary acquisition strategy. The intent of this strategy is to develop a system based upon a current understanding of joint requirements, rapidly field systems based upon those requirements, analyze operational utilization of the systems, and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. Maximum use will be made of commercial technologies; anticipate technology refresh of each DJC2 suite will be made every two years. The baseline block 1 configuration will be based upon existing S&T initiatives, Advanced Concepts Technology Demonstration Programs (ACTDs), programs of record, and fielded capabilities of the services and defense agencies, scaled to the RCC level. The block 2 and subsequent configurations will include newly developed capabilities based on emergent, joint requirements and operational feedback from utilization of earlier spiral systems, as well as on incorporation of new commercial technologies.

R-1 SHOPPING LIST - Item No. 37

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	R-1 ITEM NOMENCLATURE 0603237N Deployable Joint Command & Control (DJC2)

DJC2 is a Secretary Of Defense (SecDef) and Chairman Joint Chiefs Staff (CJCS) priority DoD transformation initiative that provides a deployable, scalable and tailorable headquarters command and control (C2) capability for each Regional Combatant Commander (RCC), and one maritime variant. It is the material solution to Standing Joint Force Headquarters (SJFHQs), a new capability to be implemented at each RCC starting in FY05. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. SecDef direction for the DJC2 program is contained in Defense Planning Guidance (DPG 03-07 and updated in DPG 04-09). The DJC2 program addresses both the Quadrennial Defense Review (QDR) finding that a joint command and control architecture needs to be developed for standing JTFs at each of the RCCs and the need for a deployable Joint Command and Control System described in the Transformation Study Report presented to the Secretary of Defense in April 2001. It integrates the requirements for and lessons learned from U.S. Central Command's deployable headquarters funded from the FY 2001 Emergency Supplemental Act for Recovery from and Response to Terrorist Attacks on the United States. DJC2 is supported by SECDEF and CJCS. The JCS/Joint Requirement Oversight Council (JROC) has approved the DJC2 Mission Needs Statement (MNS) and directed that an Operational Requirements Document (ORD) be produced in 2003.

Note that DJC2 is not a follow-on or replacement system for either the joint Global Command and Control System (GCCS) or GCCS-Maritime; rather, DJC2 will utilize GCCS in its core suite of applications, ensuring interoperability with the worldwide-installed base of GCCS-J/GCCS-M.

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

R-1 SHOPPING LIST - Item No. 37

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control					PROJECT NUMBER AND NAME X3050 DJC2					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.000**	**0.000**	**31.761**	**79.449**	**43.181**	**43.134**	**9.090**	**9.227**	**9.390**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: DJC2 seeks to provide standing, and standardized, joint C2 systems that can be deployed by RCCs 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 the new SJFHQ concept and doctrine being developed by Joint Forces Command in coordination with other RCCs and the Joint Staff, as tasked by DPG. RCC 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 RCC and JTF mission requirements. This capability must be interoperable with higher and adjacent echelons of command (to include coalition allies) as well as with supporting elements to include joint forces.

DJC2 is a SecDef and CJCS priority DoD transformation initiative that provides a deployable, scalable and tailorable headquarters command and control (C2) capability for each Regional Combatant Commander (RCC), and one maritime variant. It is the materiel solution to Standing Joint Force Headquarters (SJFHQs), a new capability to be implemented at each RCC starting in FY05. DJC2 will ensure that Joint Force Commanders (JFC) are equipped, as well as trained and organized, to carry out their C2 responsibilities. SecDef direction for the DJC2 program is contained in Defense Planning Guidance (DPG 03-07 and updated in DPG 04-09). The DJC2 program addresses both the Quadrennial Defense Review (QDR) finding that a joint command and control architecture needs to be developed for standing JTFs at each of the RCCs and the need for a deployable Joint Command and Control System described in the Transformation Study Report presented to the Secretary of Defense in April 2001. It integrates the requirements for and lessons learned from U.S. Central Command's deployable headquarters funded from the FY 2001 Emergency Supplemental Act for Recovery from and Response to Terrorist Attacks on the United States. DJC2 is supported by SECDEF and CJCS. The JCS/Joint Requirement Oversight Council (JROC) has approved the DJC2 Mission Needs Statement (MNS) and directed that an Operational Requirements Document (ORD) be produced in 2003.

Note that DJC2 is not a follow-on or replacement system for either the joint Global Command and Control System (GCCS) or GCCS-Maritime; rather, DJC2 will utilize GCCS in its core suite of applications, ensuring interoperability with the worldwide-installed base of GCCS-J/GCCS-M.

R-1 SHOPPING LIST - Item No. 37

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	X3050 DJC2

(U) B. Accomplishments/Planned Program

Accomplishments/Effort/Subtotal Cost	FY 02	FY 03	FY 04	FY 05
RDT&E Articles Quantity	0.000	15.761	20.463	18.181

- In FY03, study of Service and Joint RCC/JTF deployable C2 requirements and identification of candidate programs, both fielded and under development, to satisfy requirements. These will include S&T initiatives, ACTDs, programs of record, and fielded capabilities. Department of Army (DA), Department of Air Force (DAF), and Department of Navy (DON) will compile and prioritize Service specific C2 applications in order to create the DJC2 baseline, and will assist in integration into the baseline prototype (block 1). USJFCOM will compile and prioritize each RCC's C2 applications into the DJC2 baseline. GCCS will be the common C2 application around which DJC2 will be built. Adding the Service and RCC applications identified through the process mentioned above will allow DJC2 by definition to begin with de facto interoperability and a de facto common architecture. 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. Perform systems engineering analysis and integration (SE&I) activities to select the core set applications for the DJC2 baseline block 1 configuration. The block 2 configuration will include newly developed capabilities specifically designed to meet Joint requirements and incorporate emerging technologies, with an emphasis on utilization of commercial technology to the greatest extent possible. Develop and complete the Analysis of Alternatives (AOA) and Operational Requirements Document (ORD). Conduct requirements traceability analysis to ensure operational requirements identified in the MNS and ORD are adequately captured in specifications. Integrate legacy systems for the block 1 configuration and develop prototypes for the block 2 configuration. Develop evaluation and test plans and implement initial testing for the block 1 and block 2 configurations.
- FY03 plan includes $7.42M in DERF Congressional Add for Analysis of Alternatives.
- In FY04, continue to perform SE&I activities associated with the block 2 implementations of DJC2. Refine configuration management baselines and Technical Management Plan. Utilize analysis, architectural design, and design review processes conducted during FY03 to perform detailed design for block 2 and implement that design into the block 2 test bed. Utilize results of ACTDs and the baseline development process from FY03 to determine which applications will be transitioned to DJC2, and integrate them into the baseline. Begin the initial architecture development and design for the block 3 configuration of DJC2.
- In FY05, continue to perform SE&I activities associated with the block 3 implementations of DJC2. Refine configuration management baselines and Technical Management Plan. Utilize analysis, architectural design, and design review processes conducted during FY04 to perform detailed design for block 3 and implement that design into the engineering test bed, as well as the two testing and training evaluation suites at JFCOM and into a DJC2 suite to be delivered to PACOM. Utilize results of ACTDs to begin the initial architecture development and design for the block 3 configuration of DJC2.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	6.500	10.000	10.000
RDT&E Articles Quantity				

Develop Navy managed engineering, integration, test & analysis R&D test bed facility utilizing legacy mobile C4I systems, applications and concepts provided by the services and RCCs in the FYO3 baseline development process, and from lessons learned from Standing Joint Forces Headquarters (SJFHQ) experimentation, including EXERCISE MILLENIUM CHALLENGE '02, and C4I ACTDs. Support extended spiral development of commercial technologies to develop deployable C2 centers for each of the four RCCs and one maritime platform. Utilize this initial test facility to further refine the requirements for the DJC2 materiel solution based upon experimentation and ACTD results. Develop and implement changes in the DJC2 RDT&E test bed based on lessons learned in ACTDs. Additionally, utilize the test bed in realistic military demonstrations, and on that basis, make an assessment of the military utility of the proposed capability.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	X3050 DJC2

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.500	2.986	1.500
RDT&E Articles Quantity				

Stand up and staff joint program office (JPO) and conduct pre-acquisition planning activities. Navy will serve as Executive Agent (EA) for DJC2. Perform initial requirements analysis. Develop and complete initial acquisition, budget, and Clinger-Cohen documentation including, but not limited to, acquisition strategy, Acquisition Program Baseline, and program planning and schedule. Establish documentation requirements and begin related cost, schedule and performance activities. Utilize initial systems engineering analysis to establish systems concepts and compliance with Major Acquisition Information System (MAIS) and Clinger-Cohen Act requirements. Oversee development of the test bed facility and SE&I work to develop the initial core applications for the DJC2 baseline. Analyze and perform pre-Milestone B and C activities.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	7.000	14.000	13.500
RDT&E Articles Quantity				

Compile and prioritize C2 applications and perform SE&I functions. Evaluate validated technical concepts and technologies prototyped in advanced technology transitions, including ACTDs, to address deployable C2 requirements. Expand the Millennium Challenge '02 (MC02) experimentation capability to aid in developing the SJFHQ construct. Utilizing the compiled and prioritized list of applications developed by the services and RCCs in FY03 for the DJC2 baseline, develop the architecture for block 1 of the DJC2 capability. Emphasize technology assessment and integration and incorporation of existing commerical technologies rather than technology development to provide a prototype capability to the warfighter and to support him in the evaluation of that capability.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	32.000	0.000
RDT&E Articles Quantity				

Design, develop, integrate and implement two DJC2 test, training and evaluation suites at JFCOM. These suites will consist of legacy components of the baseline configuration and prototype systems and capabilities from both the block 2 DJC2 development and prototype capabilities developed for the SJFHQ concept demonstrations. The test and evaluation suites will be used at J7 to participate in the refinement of operational requirements and process. The training suite will be utilized at J9 to develop joint training requirements and products, test those requirements on operator and maintenance personnel manning the test and evaluation suite, and refine those requirements and products for use in production configurations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	X3050 DJC2

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
President's Budget:	0.000	39.772		
Current BES/President's Budget	0.000	31.761	79.449	43.181
Total Adjustments	0.000	-8.011	0.000	0.000
Summary of Adjustments				
Sec. 8100 Business Process Reform		-0.130		
Sec. 8135 Economic Assumptions		-0.182		
Sec. 8109 IT Cost Growth		-0.060		
Sec 8029, P.L. 107-248 FY03 FFRDC reduction		-0.023		
DJC2 - Production Reduction		-14.772		
FY03 DERF Congressional add		7.500		
Miscellaneous Department Adjustments		-0.344		
Subtotal	0.000	-8.011	0.000	0.000

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603237N Deployable Joint Command & Control	X3050 DJC2

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 2804	0	0	46,551	33,164	28,897	0	0	0	Cont.	Cont.
SCN (0204228N)	0	0	0	0	0	60,000	0	0	Cont.	Cont.

(U) E. ACQUISITION STRATEGY:

This RDT&E line supports an evolutionary acquisition strategy using spiral development. The intent of this strategy is to develop a system based upon a current understanding of joint requirements, rapidly field systems based upon those requirements, analyze operational utilization of the systems, and roll the results of the analysis into periodic upgrades of the systems to maintain currency and maximize operational effectiveness. The block 1 configuration will be based upon existing, service-specific mobile C4I systems, scaled to the Combatant Command level. The block 2 and subsequent configurations will include newly developed capabilities based on emergent, joint requirements and operational feedback based upon utilization of earlier spiral systems.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**			PROGRAM ELEMENT 0603237N Deployable Joint Command & Control			PROJECT NUMBER AND NAME X3050 DJC2						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development (Product Development)				6.500							6.500	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	TBD	TBD	0.000	15.761	VARIOUS	20.463	VARIOUS	18.181	VARIOUS	CONTINUING	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	22.261		20.463		18.181		CONTINUING	Continuing	
Remarks:												
Development Support											0.000	
Software Development	TBD	TBD		0.000	VARIOUS	46.000	VARIOUS	13.500	VARIOUS	CONTINUING	Continuing	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		46.000		13.500		CONTINUING	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**		PROGRAM ELEMENT 0603237N Deployable Joint Command & Control			PROJECT NUMBER AND NAME X3050 DJC2							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD		7.000	VARIOUS	10.000	VARIOUS	10.000	VARIOUS	CONTINUING	Continuing	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	7.000		10.000		10.000		0.000	27.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	TBD	TBD		2.500	VARIOUS	2.986	VARIOUS	1.500	VARIOUS	CONTINUING	Continuing	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	2.500		2.986		1.500		0.000	6.986	
Remarks:												
Total Cost			0.000	31.761		79.449		43.181		CONTINUING	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 37

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																													DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**									PROGRAM ELEMENT NUMBER AND NAME 0603237N Deployable Joint Command & Control														PROJECT NUMBER AND NAME X3050 DJC2											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
MILESTONE A			▲																													
MILESTONE B Block. 1-2							▲																									
MILESTONE C							▲ BLOCK 1						▲ BLOCK 2																			
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 37

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	PROGRAM ELEMENT 0603237N Deployable Joint Command & Control				PROJECT NUMBER AND NAME X3050 DJC2			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
MILESTONE A	Q3							
MILESTONE B								
BLOCK 1		Q3						
BLOCK 2		Q3						
MILESTONE C								
BLOCK 1		Q3						
BLOCK 2				Q1				

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603261N Tactical Airborne Reconnaissance			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**1.923**	**1.877**	**7.051**	**6.461**	**3.920**	**3.918**	**11.507**	**11.718**
A2467 UAV CONOPS	**1.923**	**1.877**	**7.051**	**6.461**	**3.920**	**3.918**	**11.507**	**11.718**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Department of the Navy leadership is committed to fundamentally changing the focus and direction of Naval Unmanned Aerial Vehicles (UAVs) and to procuring an operational UAV capability as soon as possible. Strategy is to employ a family of UAVs to accomplish long range, persistent and penetrating ISR and strike support with growth to fully weaponized, Unmanned Combat Air Vehicle (UCAV) capability. Capabilities expected include: Broad Area Maritime Surveillance (BAMS); reduced target detection to engagement timelines; increased naval force situational awareness; and penetrating surveillance and lethal Suppression of Enemy Air Defenses (SEAD)/Strike.

In support of the Navy's overall UAV strategy, this program provides studies of Concept of Operations (CONOPS) for UAV integration into USN battle space dominance operations, including the roles UAVs play in Force Net and Time Critical Strike. By providing fleet input based on current operations with UAVs in a simulated combat environment, this CONOPS development investment is the foundation of upcoming efforts in the Broad Area Maritime Surveillance (BAMS) UAV and the UCAV - Navy (UCAV-N) programs. Specifically, this program:

- Demonstrates and assesses joint utility of TCS, Firescout, Global Hawk and Predator integration into Carrier Battle Group (CVBG) operations.
- Demonstrates UAV integration into USN battlespace dominance operations and network centric warfare through sea trial.
- Demonstrates UAV integration into USN sensor-to-shooter and time critical strike operations.
- Develops Intelligence, Surveillance, and Reconnaissance CONOPS in support of strike, Military Operations Other Than War (MOOTW), Anti-Air Warfare (AAW), Combat Search and Rescue (CSAR). Maritime Patrol and Reconnaissance.
- Demonstrates UAV cross cueing capability with theater and strategic intelligence sources.

R-1 SHOPPING LIST - Item No. 39

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
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			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
A2467 UAV CONOPS Research	**1.923**	**1.877**	**7.051**	**6.461**	**3.920**	**3.918**	**11.507**	**11.718**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Department of the Navy leadership is committed to fundamentally changing the focus and direction of Naval Unmanned Aerial Vehicles (UAVs) and to procuring an operational UAV capability as soon as possible. Strategy is to employ a family of UAVs to accomplish long range, persistent and penetrating ISR and strike support with growth to fully weaponized, Unmanned Combat Air Vehicle (UCAV) capability. Capabilities expected include: Broad Area Maritime Surveillance (BAMS); reduced target detection to engagement timelines; increased naval force situational awareness; and penetrating surveillance and lethal Suppression of Enemy Air Defenses (SEAD)/Strike.

In support of the Navy's overall UAV strategy, this program provides studies of Concept of Operations (CONOPS) for UAV integration into USN battle space dominance operations, including the roles UAVs play in Force Net and Time Critical Strike. By providing fleet input based on current operations with UAVs in a simulated combat environment, this CONOPS development investment is the foundation of upcoming efforts in the Broad Area Maritime Surveillance (BAMS) UAV and the UCAV - Navy (UCAV-N) programs. Specifically, this program:

- Demonstrates and assesses joint utility of TCS, Firescout, Global Hawk and Predator integration into Carrier Battle Group (CVBG) operations.
- Demonstrates UAV integration into USN battlespace dominance operations and network centric warfare through sea trial.
- Demonstrates UAV integration into USN sensor-to-shooter and time critical strike operations.
- Develops Intelligence, Surveillance, and Reconnaissance CONOPS in support of strike, Military Operations Other Than War (MOOTW), Anti-Air Warfare (AAW), Combat Search and Rescue (CSAR), Maritime Patrol and Reconnaissance.
- Demonstrates UAV cross cueing capability with theater and strategic intelligence sources.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603261N Tactical Airborne Reconnaissance	A2467 UAV CONOPS Research

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.923	1.277	1.483	1.514
RDT&E Articles Quantity				

Conduct studies and demonstrations for CONOPs development in support of Naval Strike Warfare mission.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	4.968	4.647
RDT&E Articles Quantity				

Conduct studies, demonstrations, experimentation, and CONOPs development for joint utility Global Hawk, Navy Global Hawk Maritime Demonstration System, conduct VTUAV System CONOPs, demonstration and experimentation.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.600	0.600	0.300
RDT&E Articles Quantity				

Conduct DoD UAV Joint Test & Evaluation program.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603261N Tactical Airborne Reconnaissance	A2467 UAV CONOPS Research

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget	1.934	1.922	1.921	11.493
Current BES/President's Budget	1.923	1.877	7.051	6.461
Total Adjustments	-0.011	-0.045	5.130	-5.032
Summary of Adjustments				
Congressional Rescissions	-0.004			
Congressional Undistributed Reductions		-0.014		
Economic Assumptions	-0.005	-0.031	-0.163	-0.139
NMCI			-0.007	-0.011
Other Navy/OSD Adjustments			5.300	-4.882
Reprogramming	-0.002			
Subtotal	-0.011	-0.045	5.130	-5.032

Economic Adjustments

(U) Schedule: Not applicable

(U) Technical: Not applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603261N Tactical Airborne Reconnaissance	A2467 UAV CONOPS Research

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

(U) E. ACQUISITION STRATEGY: Not applicable

R-1 SHOPPING LIST - Item No.39

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Systems Engineering/ILS Support	TBD	NGC Ryan, San Diego, CA				3.000	12/03	3.000	12/04	Continuing	Continuing	
Engineering Support	WX	NSAWC, Fallon, Nevada	5.827	1.277	12/02	1.483	12/03	1.514	12/04	Continuing	Continuing	
											0.000	
Studies & Analyses	WX	NAWCWD, China Lake, CA				1.968	12/03	1.647	12/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			5.827	1.277		6.451		6.161		Continuing	Continuing	C
Remarks:												

R-1 SHOPPING LIST - Item No.39

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	Vicksburg, MS		0.600	01/03	0.600	12/03	0.300	12/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	0.600		0.600		0.300		Continuing	Continuing	
Remarks:												
										0.000	0.000	
											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			5.827	1.877		7.051		6.461		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No.39

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603382N Advanced Combat System Technology			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**3.111**	**3.276**	**3.394**	**3.346**	**1.918**	**0.981**	**0.985**	**0.999**
K0324/Advanced Combat System Technology	**3.111**	**3.276**	**3.394**	**3.346**	**1.918**	**0.981**	**0.985**	**0.999**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Combat System Technology line funds engineering studies, real time instrumentation and risk reduction 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) computing architecture with an open, distributed architecture planned for introduction in Baseline 7 Phase II. A secondary priority will be the design of the flow and display of tactical information through the "detect-control-engage" process to provide decision quality information. These advanced Human Systems Interface (HSI) technologies are candidate systems for future baseline upgrades.

R-1 SHOPPING LIST - Item No. 40

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603382N Advanced Combat System Technology	K0324/Advanced Combat System Technology

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.390	0.200		
RDT&E Articles Quantity				

Continue development and integration of Distributed Tactical Computing Environment (DTCE) capability based on Commercial Off-The-Shelf (COTS) and Defense Advanced Research Project Agency) DARPA technologies. Continue development and integration of DTCE capability based on advanced hardware and software technologies emerging from computing industry providers.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.617			
RDT&E Articles Quantity				

Conducted experiments focused on transition of selected Aegis Weapons System (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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.104			
RDT&E Articles Quantity				

Provided feedback to DARPA and to the AEGIS prime contractor for incorporation into baseline developments.

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EXHIBIT R-2, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603382N Advanced Combat System Technology	K0324/Advanced Combat System Technology

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.000			
RDT&E Articles Quantity				

Assessed capability of DTCE to meet projected requirements of future baseline upgrades and missions, e.g. Ship Based Midcourse (SBM).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			0.300	0.300
RDT&E Articles Quantity				

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 Aegis Baseline 7 Phase II in order to provide guidance and implement lessons learned from the advanced computing testbed.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.726	1.988	1.940
RDT&E Articles Quantity				

Continue development of the Dynamic Resource Management (DRM) technology in preparation for transitioning DRM to a production status. DRM provides vital capabilities for managing a system-wide configuration of computers and sustaining real-time performance objectives despite damage and mission priority changes. DRM can divert resources initially devoted to lower priority tasks so that the resources can be used for urgent warfighting tasks and missions or to replace damaged components. In addition, since DRM treats all computer resources as a pool of computers, any one of which may be used for important functions, DRM can also serve as a manning reduction enabler. Using this approach, the shipboard computing pool can be fully configured with a given level of sparing at the beginning of a deployment. Any equipment that breaks or is damaged during the deployment can then be "configured out" of the system by DRM until the ship returns from the deployment. At that point, repairs and replacement can be effected by land based personnel rather than repaired by maintenance technicians at sea. Tasks remaining to be performed prior to productization of DRM include: making DRM itself fault tolerant and scalable, adding a network Quality-of-Service (QoS) control mechanism and integrating it into DRM, integrating system failure management policies across DRM, communication middleware and network services, integrating instrumentation data correlation services with resource allocation processing, and providing amplified operator explanatory services. Continue to demonstrate and validate 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 AEGIS Baseline 7 Phase II in order to provide guidance and implement lessons learned from the advanced computing testbed.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603382N Advanced Combat System Technology	K0324/Advanced Combat System Technology

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.300		
RDT&E Articles Quantity				

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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.950	1.000	1.000
RDT&E Articles Quantity				

Explore techniques to enable enhanced weapons employment (in contrast to merely weapons coordination efforts at the command level) 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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.100	0.106	0.106
RDT&E Articles Quantity				

Work with Science & Technology (S&T) communities (e.g. DARPA and Office of Naval Research (ONR)) to provide domain specific (real time weapons control) problems on which to focus S&T investment and validation of candidate technologies against these challenge domain specific performance requirements. Provide engineering quality lessons learned and benchmarking information back to S&T sponsors and technology developers for enhancements.

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603382N Advanced Combat System Technology	K0324/Advanced Combat System Technology

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	3.427	3.350	3.574	3.524
Current BES/President's Budget: (FY04/05 Pres Controls)	3.111	3.276	3.394	3.346
Total Adjustments	-0.316	-0.074	-0.180	-0.178
Summary of Adjustments				
SBIR/STTR Transfer	-0.058			
Economic Assumtions	-0.191	-0.074	-0.180	-0.178
Reprogrammings	-0.067			
Congressional increases				
Subtotal	-0.316	-0.074	-0.180	-0.178

Schedule:

N/A

Technical:

N/A

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / 1319 BA-4	0603382N Advanced Combat System Technology	K0324/Advanced Combat System Technology

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604307 N Aegis Combat System Engin	320.187	340.426	205.733	208.048	217.746	217.286	230.800	206.056	Continuing	Continuing

E. ACQUISITION STRATEGY: *

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

F. MAJOR PERFORMERS: **

NSWC/ Dahlgren - Dahlgren, Virginia - Lifecycle Support Engineering Agent 12/02
Johns Hopkins University / Applied Physics Lab (JHU/APL) - Baltimore, Maryland - Laboratory 11/02

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603382N Advanced Combat System Technology			PROJECT NUMBER AND NAME K0324/Advanced Combat System Technology						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Systems Engineering	SS/CPFF	APL / Baltimore, MD	10.155	0.759	11/02	0.822	11/03	0.811		Continuing	Continuing	
Systems Engineering	WR	NSWC / Dahlgren, VA	16.388	2.167	12/02	2.218	12/03	2.186		Continuing	Continuing	
Systems Engineering	WR	NAWCAD / St. Inigoes, MD	2.000							Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			28.543	2.926		3.040		2.997		Continuing	Continuing	
Remarks:												
Development Support	WR	Miscellaneous	0.501	0.072	11/02	0.071	11/03	0.071		Continuing	Continuing	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.501	0.072		0.071		0.071		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603382N Advanced Combat System Technology				PROJECT NUMBER AND NAME K0324/Advanced Combat System Technology						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Miscellaneous	0.371	0.000		0.000		0.000		Continuing	Continuing	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.371	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WR	Miscellaneous	0.943	0.278	11/02	0.283	11/03	0.278		Continuing	Continuing	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.943	0.278		0.283		0.278		Continuing	Continuing	
Remarks:												
Total Cost			30.358	3.276		3.394		3.346		Continuing	Continuing	
Remarks:												

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																															DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603382N Advanced Combat System Technology												PROJECT NUMBER AND NAME K0324/Advanced Combat System Technology											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Test & Evaluation Milestones																																
Production Milestones																																
Deliveries																																

Not Applicable: The Advanced Combat System Technology line is LOE and Scientific Research. See R-2 Page 1.

R-1 SHOPPING LIST - Item No. 40

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603382N Advanced Combat System Technology				PROJECT NUMBER AND NAME K0324/Advanced Combat System Technology			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

Not Applicable: The Advanced Combat System Technology line is LOE and Scientific Research. See R-2 Page 1.

R-1 SHOPPING LIST - Item No. 40

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**						R-1 ITEM NOMENCLATURE 0603502N/Surface and Shallow Water Mine Countermeasure					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**602.950**	**137.208**	**148.356**	**140.731**	**101.076**	**91.843**	**92.314**	**82.709**	**92.370**	**Continuing**	**Continuing**
Remote Minehunting System/Q0260/Q2387	**271.007**	**55.630**	**60.792**	**55.516**	**14.677**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**457.622**
Integrated Combat Weapons System/Q1233/Q2388	**47.522**	**14.036**	**12.477**	**3.758**	**2.823**	**3.625**	**3.243**	**4.256**	**4.199**	**Continuing**	**Continuing**
Unmanned Underwater Vehicle/Q2094/Q2852	**106.483**	**62.499**	**74.425**	**81.457**	**65.956**	**55.877**	**47.936**	**48.093**	**57.822**	**Continuing**	**Continuing**
Shallow Water Mine Countermeasure/Q2131	**177.938**	**5.043**	**0.662**	**0.000**	**17.620**	**32.341**	**41.135**	**30.360**	**30.349**	**Continuing**	**Continuing**
											0.000
											0.000
Quantity of RDT&E Articles											**0.000**

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

The program provides for developments to combat the threat of known and projected foreign mines against U.S. Naval and merchant shipping in harbors, channels, choke points, sea lines of communications and amphibious and other fleet operating areas. It develops: (1) organic remote minehunting capability for surface platforms; (2) the integration and improvement of systems and support for systems which will detect, localize 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) Unmanned Undersea Vehicle (UUV) systems for clandestine mine reconnaissance.

(U) B. JUSTIFICATION FOR BUDGET ACTIVITY:

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

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM					PROJECT NUMBER AND NAME Q0260/Q2387, Remote Minehunting Systems					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**271.007**	**55.630**	**60.792**	**55.516**	**14.677**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**457.622**
RDT&E Articles Qty		**2**	**1**	**1**	**0**	**0**					**4**

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

The Remote Minehunting System (RMS), AN/WLD-1(V)1, program develops a new remotely operated minehunting system for surface ships. This effort includes development and integration of a remote minehunting vehicle, minehunting 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.

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q0260/Q2387, Remote Minehunting Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	28.642	40.314	41.775	8.384
RDT&E Articles Quantity	2	1	1	

Complete Critical Design and continue fabrication of Engineering Development Models (EDMs) for the RMS. Conduct Functional/Physical Configuration Audit of Data Link Subsystem and Launch and Recovery Subsystem. Continue with the fabrication of Engineering Development Models (EDMs) for the RMS and begin Pilot Line Proofing of system hardware. Complete fabrication of Engineering Development Models (EDMs) for the RMS including Physical Configuration Audit (PCA) and continue Pilot Line Proofing of system hardware. Completion of the Engineering Manufacturing and Development Phase, of pilot line proofing, and Engineering Change Proposals (ECPs) resulting from OPEVAL.

Continue System Engineering for the RMS EDMs including supporting Critical Design Review.

Determine Award Fee

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	14.100	10.645	5.476	3.619
RDT&E Articles Quantity	2	1	1	

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q0260/Q2387, Remote Minehunting Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	10.241	8.606	7.032	2.009
RDT&E Articles Quantity	2	1	1	

Complete the Critical Item Test of the Remote Minehunting Vehicle and generate final report. Complete Developmental Test (DT) Assist for the Launch and Recovery Subsystem portion of the shipboard equipment. Conduct DT Assist of the Datalink Subsystem for the RMS Shipboard Equipment. Began test preparation for TECHEVAL Phase I on ship of opportunity. Complete test preparation and conduct TECHEVAL Phase I and II for the RMS. Conduct and complete OPEVAL.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.647	1.227	1.233	0.665
RDT&E Articles Quantity	2	1	1	

Funds provided for Program Management Support and Travel.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q0260/Q2387, Remote Minehunting Systems

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY03 President's Controls:	58.642	61.452	47.833	20.300
FY04 President's Controls:	55.630	60.792	55.516	14.677
Total Adjustments	-3.012	-0.660	7.683	-5.623
Summary of Adjustments				
FY02 BTR July 02	-0.228			
Sec. 313 PL-107-206 - Revised	-0.125			
Economic Assumptions	-0.158			
Misc Adjustments	-2.501	-0.660	7.683	-5.623
Subtotal	-3.012	-0.660	7.683	-5.623

(U) Schedule:

Program changed to procure four production systems in FY05 and FY06.

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q0260/Q2387, Remote Minehunting Systems

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Line 262200, OPN										
RMS	0	0	0	33.836	35.839	0	0	0		
Support	0	0	0	1.879	4.568	0	0	0		
Total	0	0	0	35.715	40.407	0	0	0		76.122
(U) RDT&E, Line 0604373, Q0529	8.544	17.178	17.878	5.187	0	0	0	0	Continuing	Continuing

(U) E. ACQUISITION STRATEGY:

The government 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 CPIF sole source contract was 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-20A airborne minehunting system and the AN/WLD-1(V)1. The AN/WLD-1(V)1 contract plan is for the development of EDMs, system interactive electronic technical manual (IETM), provisioning data, technical drawings and data, and engineering services. The AN/WLD-1(V)1 program plans to update the acquisition strategy in accordance with the new POM 04 guidance, that includes integration of the AN/WLD-1(V)1 on DDG-51 Class Flight IIA ships beginning with DDG 91. The 4 EDM remote minehunting vehicles are required to meet ship schedules for DDG ship deliveries prior to receiving follow-on production units and to support the stand-up of the maintenance and training facilities.

(U) F. MAJOR PERFORMERS:

- Lockheed Martin, Syracuse, NY: Primary hardware development and integration, system engineering, software development, ship integration, and integrated logistic support.

- NSWC, CSS, Panama City, FLA: Hardware development and integration, system engineering, software development, integrated logistic support, and ship integration.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q0260/Q2387, Remote Minehunting Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development & Integration	CPIF	Lockheed Martin	149.992								149.992	N/A
Hardware Development & Integration	CPIF	Lockheed Martin	13.939	35.763	11/02	38.545	11/03	6.445	11/04		94.692	N/A
Hardware Development & Integration	WR	NWSC, CSS	4.000	1.781	10/02	1.935	10/03	0.969	10/04		8.685	N/A
Systems Engineering	CPIF	Lockheed Martin	8.426								8.426	N/A
Systems Engineering	CPIF	Lockheed Martin	2.736	2.473	11/02	0.811	11/03	0.485	11/04		6.505	N/A
Systems Engineering	WR	NWSC, CSS	1.000	0.297	10/02	0.484	10/03	0.485	10/04		2.266	N/A
Award Fees			8.457								8.457	N/A
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											0.000	
Subtotal Product Development			188.550	40.314		41.775		8.384		0.000	279.023	

Remarks:
GFE - AN/AQS-20 systems provided to RMS program were funded under PE 0604373/Q0529
Lockheed Martin, Syracuse, NY, contracts: (1) N00024-96-C-6322 was competitive CPAF/CPIF and (2) N00024-02-C-6309 was sole source CPIF.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q0260/Q2387, Remote Minehunting Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	CPIF	Lockheed Martin	10.935								10.935	N/A
Software Development	CPIF	Lockheed Martin	3.700	3.759	11/02	0.414	11/03	0.388	11/04		8.261	N/A
Software Development	WR	NSWC, CSS	2.101	0.198	10/02	0.290	10/03	0.291	10/04		2.880	N/A
ILS	CPIF	Lockheed Martin	8.760								8.760	N/A
ILS	CPIF	Lockheed Martin	3.540	3.636	11/02	3.009	11/03	1.163	11/04		11.348	N/A
ILS	WR	NSWC, CSS	2.150	0.099	10/02	0.290	10/03	0.291	10/04		2.830	N/A
Ship Integration	CPIF	Lockheed Martin	1.940								1.940	N/A
Ship Integration	CPIF	Lockheed Martin	0.660	1.385	11/02	0.677	11/03	0.388	11/04		3.110	N/A
Ship Integration**	Various	Various	15.401	1.568	12/02	0.796	12/03	1.098	12/04		18.863	N/A
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											0.000	
Subtotal Support			49.187	10.645		5.476		3.619		0.000	68.927	

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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q0260/Q2387, Remote Minehunting Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPIF	Lockheed Martin	28.476								28.476	N/A
Developmental Test & Evaluation	CPIF	Lockheed Martin	6.144	7.122	11/02	2.513	11/03	0.590	11/04		16.369	N/A
Developmental Test & Evaluation	WR	NSWC, CSS	2.500	1.484	10/02	4.519	11/03	1.419	10/04		9.922	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			37.120	8.606		7.032		2.009		0.000	54.767	
Remarks:												
Contractor Engineering Support	CPIF	Lockheed Martin	4.500								4.500	N/A
Government Engineering Support	WR	NSWC, CSS	34.525								34.525	N/A
Program Management Support	CPFF	Vredenburg	2.677	1.138	11/02	1.146	11/03	0.578	11/04		5.539	N/A
Travel	Various	NAVSEA	0.270	0.089	Various	0.087	Various	0.087	Various		0.533	N/A
SBIR Assessment	Various	Various	9.808								9.808	N/A
											0.000	
Subtotal Management			51.780	1.227		1.233		0.665		0.000	54.905	
Remarks: Award dates for management are various because multiple activities are receiving tasks at different times during the fiscal year.												
Total Cost			326.637	60.792		55.516		14.677		0.000	457.622	
Remarks:												

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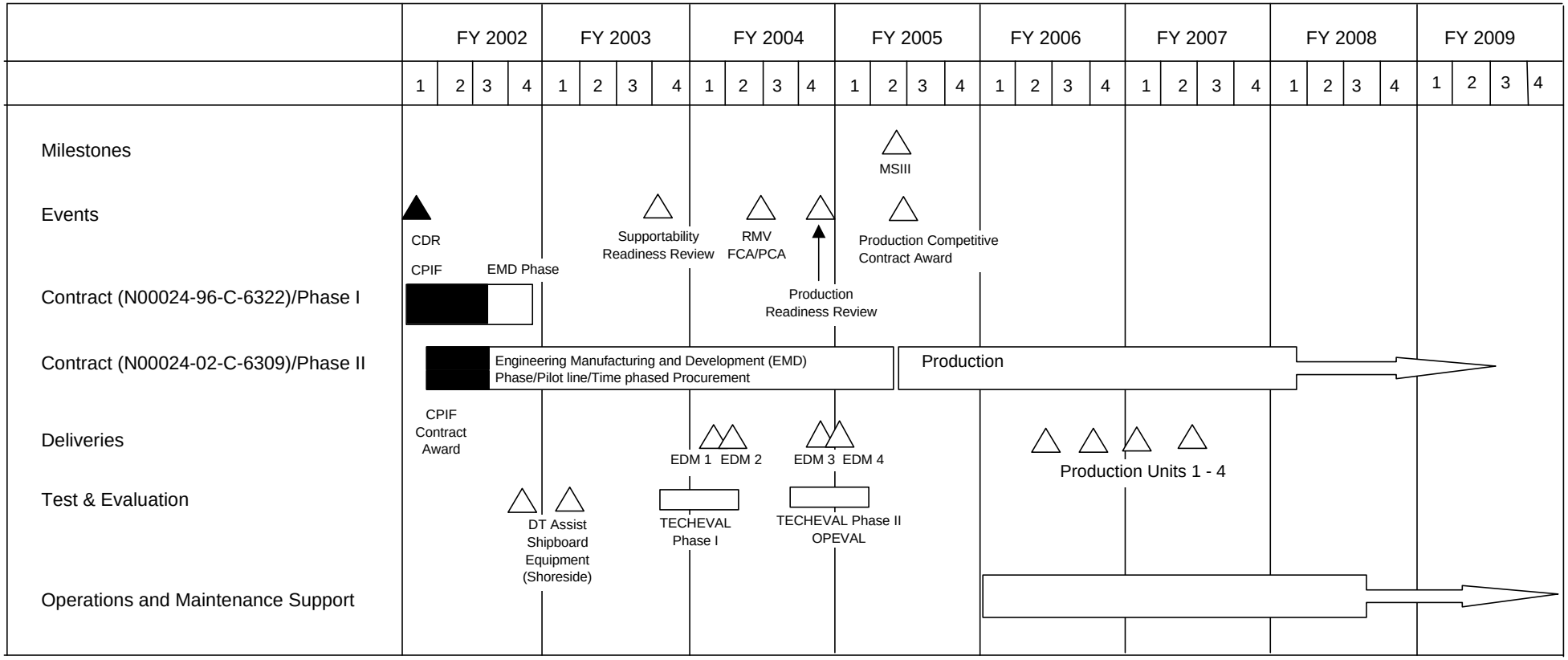
CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER Q0260/Q2387, Remote Minehunting Systems

AN/WLD-1(V)1 PROGRAM SCHEDULE



R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME Q0260/Q2387, Remote Minehunting Systems			
Schedule Profile: AN/WLD-1 (V)1	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone III (MSIII)				2Q				
Critical Design Review (CDR)	1Q							
Supportability Readiness Review		4Q						
Functional & Physical Configuration Audit (FCA)/(PCA)			2Q-3Q					
Production Readiness Review (PRR)			4Q					
Production Competitive Contract Award				2Q				
Cost Plus Incentive Fee (CPIF), EMD Phase I	1Q-4Q							
Engineering Manufacturing & Development(EMD) Phase I	2Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q				
Production Start				3Q-4Q				
EDM 1 Delivery			1Q					
EDM 2 Delivery			2Q					
EDM 3 Delivery			4Q					
EDM 4 Delivery				1Q-2Q				
Production Unit 1-4 Delivery					2Q-3Q	1Q-3Q		
Developmental Testing (DT) Shipboard Equip (shoreside)	4Q	1Q						
Technical Evaluation (TECHEVAL), Phase I		4Q	1Q-2Q					
Technical Evaluation (TECHEVAL), Phase II			3Q-4Q	1Q				
Operational Evaluation (OPEVAL)			3Q-4Q	1Q				
Opeations and Maintenance Support Start					1Q			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM					PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**47.522**	**14.036**	**12.477**	**3.758**	**2.823**	**3.625**	**3.243**	**4.256**	**4.199**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

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

(1) Integrated Combat Weapon System (ICWS) is an open architecture system which will demonstrate common control of multiple unmanned systems with optimal manning and provide a foundation for future improvement / modernization of Combat Systems on MCM and MHC class ships and future mine warfare platforms. (2) Mine Warfare and Environmental Decision Aids Library (MEDAL) is a software segment on the Global Command and Control System – Maritime (GCCS-M). MEDAL provides mine and mine warfare planning and evaluation tools and databases to the MCM Commander. (3) 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.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.499	2.542	0.372	0.000
RDT&E Articles Quantity				

ICWS Block I
Continue / complete hardware design for ICWS.

ORGANIC MCM C4I
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. Continue organic/dedicated MUW tactics development. Initiate the development of thru sensor technology. Continue planning and evaluation of models/algorithms. Initiate advanced MUW TDA development. Continue organic/dedicated MUW tactics development. Continue thru sensor technology development. Continue advanced MUW TDA development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	6.629	7.889	2.911	2.343
RDT&E Articles Quantity				

ICWS Block I
Complete software design/code/test for ICWS, complete subsystem integration and testing, and begin EDM 1 integration and testing in the laboratory. Complete EDM 1 integration and testing in the laboratory. Install on ship of opportunity.

MEDAL
Complete Build 8. Initiate development of Build 9 and initiate integration and testing. Complete integration and testing of Build 9. Complete Build 9. Initiate the development of Build 10. Complete development of Build 10. Initiate integration and testing of Build 10. Complete integration and testing of Build 10. Initiate development of Build 11. Complete development of Build 11. Initiate integration and testing of Build 11. Initiate development of Build 12.

ORGANIC MCM C4I
Complete the development of phase 1 MUW Network Centric Warfare database and support network. Initiate development of Phase II MUW network centric warfare database and support network.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.908	2.046	0.475	0.480
RDT&E Articles Quantity				

Provide program management support and travel for ICWS Block I, MEDAL, and ORGANIC MCM C4I programs.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY03 President's Controls:	14.619	12.758	6.501	6.216
FY04 President's Controls:	14.036	12.477	3.758	2.823
Total Adjustments	-0.583	-0.281	-2.743	-3.393
Summary of Adjustments				
FY02 BTR July 02	-0.288			
Sec. 313, PL 107-206 - Revised	-0.031			
Economic Assumptions	-0.039	-0.072		
Misc Adjustments	-0.225	-0.209	-2.743	-3.393
Subtotal	-0.583	-0.281	-2.743	-3.393

(U) Schedule:

Because of program restructure and funding issues, EDM-2 and 3 will not be procured.

(U) Technical:

Not Applicable

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Line 262200, OPN										
ICWS	2.477	1.383	2.724	5.099	1.503	1.679	13.677	23.332	Continuing	Continuing

(U) E. ACQUISITION STRATEGY:

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 05 tasks will be accomplished under Firm Fixed Price (FFP) 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.

(U) F. MAJOR PERFORMERS:

- Lockheed Martin, Manassas, VA: Primary hardware contractor for ICWS Block 1.
- NSWC, CSS, Panama City, FLA: System Engineering Support.
- ONR/SAIC, Arlington, VA: Primary software developer for MEDAL.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	Raytheon, RI	2.960								2.960	N/A
Primary Hardware Development	SS/FFP	Lockheed Martin	3.484								3.484	N/A
Primary Hardware Development	WR/RCP	NSWC, CSS/NAWC	2.705	0.701	11/02						3.406	N/A
Systems Engineering	Various	NSWC, CSS/NAVAIR	10.777	1.841	11/02	0.372	11/03			Continuing	Continuing	N/A
Award Fees	SS/CPIF		0.439								0.439	N/A
											0.000	
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Subtotal Product Development			20.365	2.542		0.372		0.000		0.000	23.279	

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.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Software Development	WR	NSWC	12.296	1.956	11/02	0.573	11/03			Continuing	Continuing	N/A
Software Development	SS/FFP	Lockheed Martin	5.815	3.754	11/02						9.569	N/A
Software Development	WR/PD	NSWC/CD, ARL/UT, ONR	14.817	2.179	11/02	2.338	11/03	2.343	11/04	Continuing	Continuing	N/A
Software Development	SS/FFP	SAIC	0.100							Continuing	Continuing	N/A
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											0.000	
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Subtotal Support			33.028	7.889		2.911		2.343		0.000	46.171	

Remarks:

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

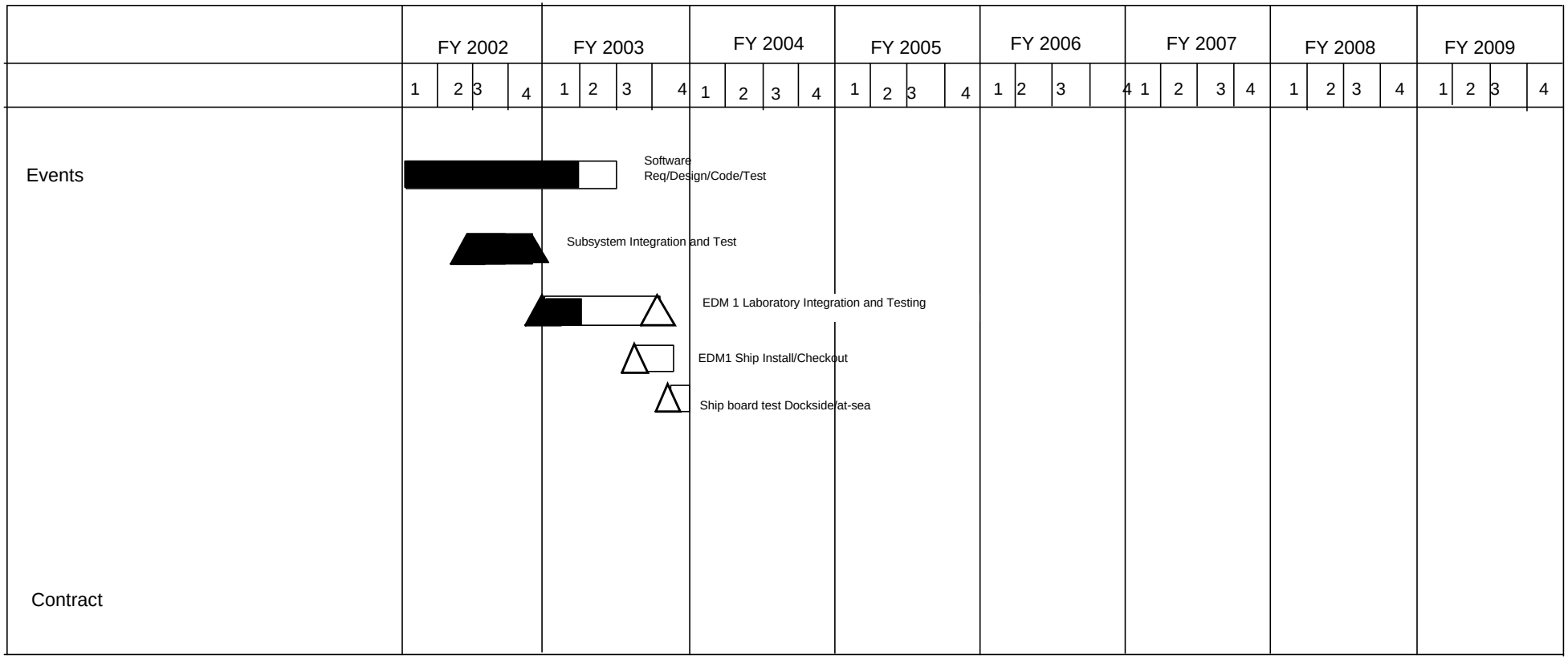
Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPIF	Lockheed Martin	0.200								0.200	N/A
Operational Test & Evaluation	CPIF	Lockheed Martin	1.592								1.592	N/A
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			1.792	0.000		0.000		0.000		0.000	1.792	
Remarks:												
Contractor Engineering Support			0.153								0.153	N/A
Government Engineering Support			0.500								0.500	N/A
Program Management Support	Various	NAVSEA	4.858	1.751	11/02	0.233	11/03	0.220	11/04	Continuing	Continuing	N/A
Program Management Support	CPFF	Vredenburg	0.506	0.234	11/02	0.181	11/03	0.197	11/04	Continuing	Continuing	N/A
Travel			0.160	0.061	11/02	0.061	11/03	0.063	11/04	Continuing	Continuing	N/A
SBIR Assessment			0.196								0.196	N/A
Subtotal Management			6.373	2.046		0.475		0.480		0.000	9.374	
Remarks: Award dates for management are various because multiple activities are receiving tasks at different times during the fiscal year.												
Total Cost			61.558	12.477	0.000	3.758	0.000	2.823	0.000	0.000	80.616	
Remarks:												

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	0603502N, Surface & Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

ICWS BLOCK 1 PROGRAM SCHEDULE

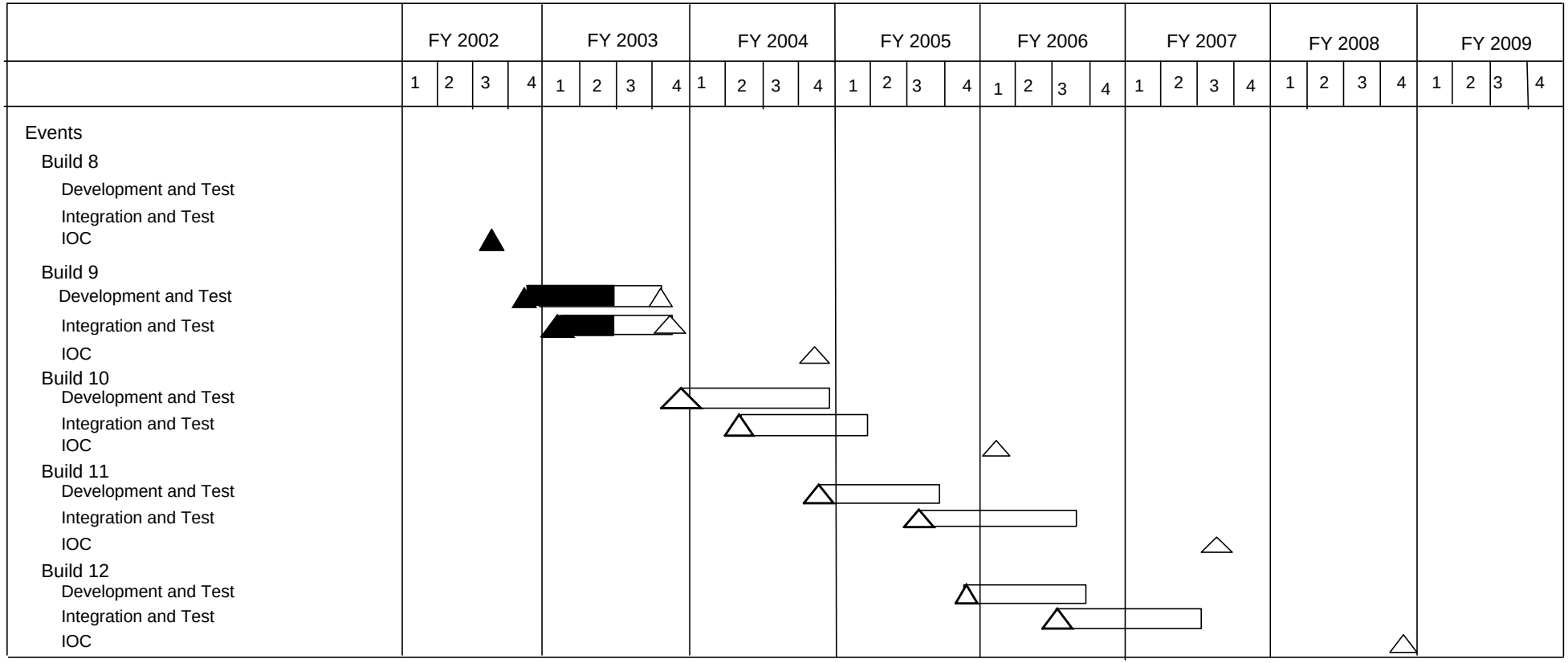


R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	0603502N, Surface & Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

MEDAL PROGRAM SCHEDULE

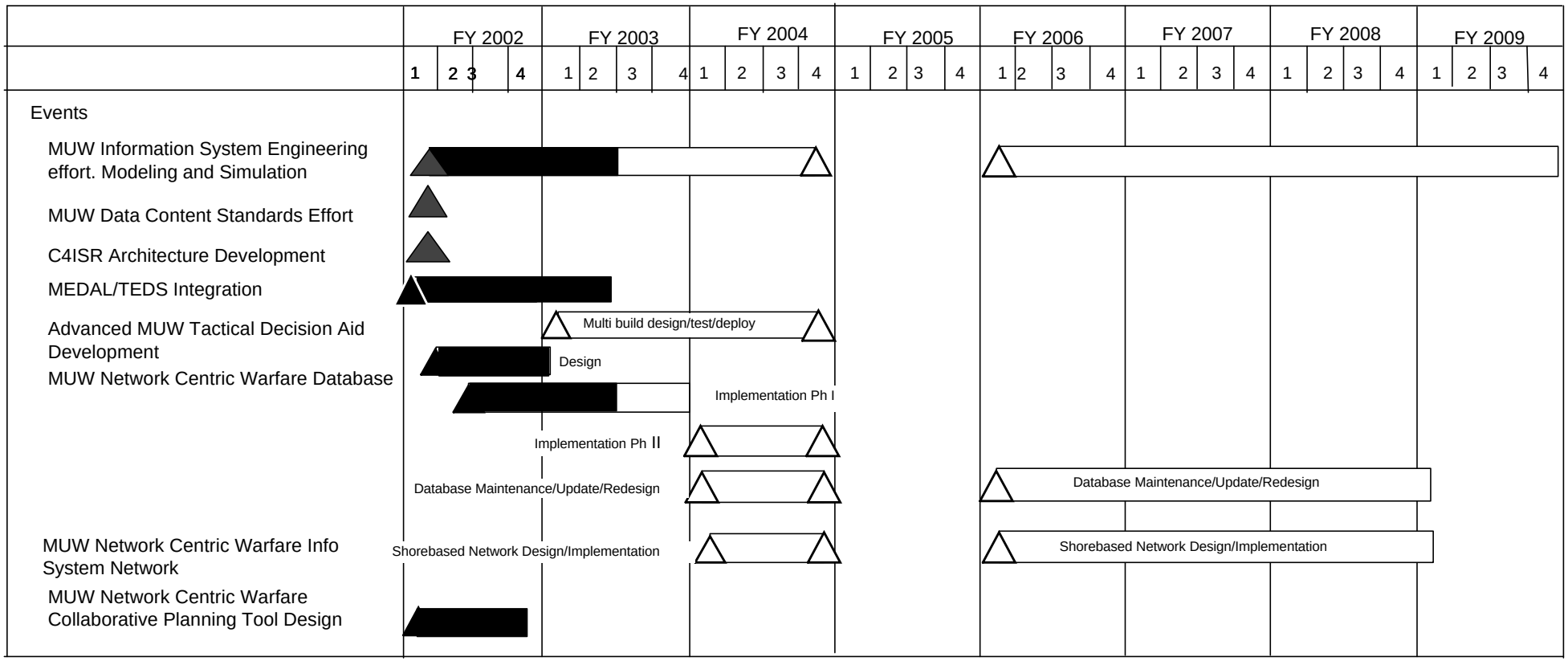


R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	0603502N, Surface & Shallow Water MCM	Q1233/Q2388, Integrated Combat Weapons System

MUW C4ISR PROGRAM SCHEDULE

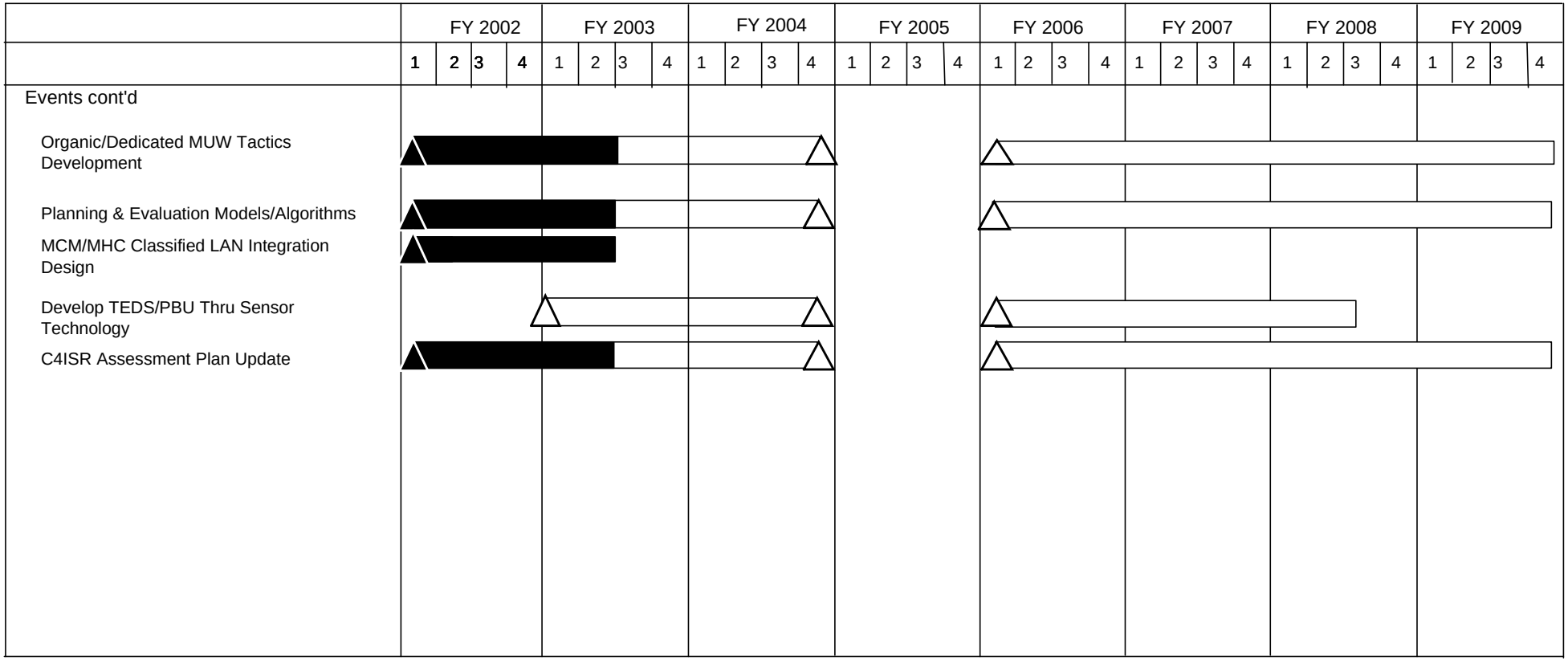


R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603502N, Surface & Shallow Water MCM	PROJECT NAME AND NUMBER Q1233/Q2388, Integrated Combat Weapons System

MUW C4ISR PROGRAM SCHEDULE CONT'D



R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System			
Schedule Profile: ICWS Block 1	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Software Req/Design/Code/Test	1Q-4Q	1Q-3Q						
Subsystem Integration and Test	2Q-4Q							
EDM 1 Laboratory Integration and Testing	4Q	1Q-3Q						
EDM 1 Ship Install/Checkout		3Q-4Q						
Shipboard Test Dockside/At-Sea		4Q						

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System			
Schedule Profile: MEDAL	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Build 8 IOC	3Q							
Build 9 Development and Test	4Q	1Q-4Q						
Build 9 Integration and Test		1Q-4Q						
Build 9 IOC			4Q					
Build 10 Development and Test		4Q	1Q-4Q					
Build 10 Integration and Tests			2Q-4Q	1Q				
Build 10 IOC					1Q			
Build 11 Development and Test			4Q	1Q-3Q				
Build 11 Integration and Tests				3Q-4Q	1Q-3Q			
Build 11 IOC						3Q		
Build 12 Development and Test				4Q	1Q-3Q			
Build 12 Integration and Tests					3Q-4Q	1Q-2Q		
Build 12 IOC							4Q	

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603502N, Surface & Shallow Water MCM				PROJECT NUMBER AND NAME Q1233/Q2388, Integrated Combat Weapons System			
Schedule Profile: MUW C4ISR	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
MUW Info System Engineering (Modeling & Simulation)	1Q-4Q	1Q-4Q	1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
MUW Data Content Standards Effort	1Q							
C4ISR Architecture Development	1Q							
MEDAL/TEDS Integration	1Q-4Q	1Q - 2Q						
Advanced MUW Tactical Decision Aid Development		1Q-4Q	1Q-4Q					
MUW Network Centric Warfare Database:								
- Design	1Q-4Q	1Q						
- Implementation Phase I	2Q-4Q	1Q-4Q						
- Implementation Phase II			1Q-4Q					
- Database Maintenance/Update/Redesign			1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	
MUW Network Centric Warfare Info System Network			1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	
MUW Network Centric Warfare Collaborative Planning Tool	1Q-4Q							
Organic/Dedicated MUW Tactics Development	1Q-4Q	1Q-4Q	1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Planning & Evaluation Models/Algorithms	1Q-4Q	1Q-4Q	1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
MCM/MHC Classified LAN Integration Design	1Q-4Q	1Q - 2Q						
Develop TEDS/PBU Thru Sensor Technology		1Q-4Q	1Q-4Q		1Q-4Q	1Q-4Q	1Q-3Q	
C4ISR Assessment Plan Update	1Q-4Q	1Q-4Q	1Q-4Q		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603502N, Surface and Shallow Water MCM					PROJECT NUMBER AND NAME Q2131, Assault Breaching Systems					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**177.938**	**5.043**	**0.662**	**0.000**	**17.620**	**32.341**	**41.135**	**30.360**	**30.349**	**Continuing**	**Continuing**
RDT&E Articles Qty											**0**

(U) 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/sea mines and obstacles in the beach zone and surf zone approaches to amphibious assault areas. It develops a family of systems (Countermine/Counter Obstacle, Intelligence/Surveillance/reconnaissance/targeting, Navigation/Virtual Marking/Integration, C4I/Data Fusion) to provide a full assault breaching capability .

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q2131, Assault Breaching Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.200	0.000	0.000	11.335
RDT&E Articles Quantity				

Product Development:

Primary Hardware Development $11.535: Component Advanced Development for ABS Counter Mine-Counter Obstacle System ($4.569 FY05), ISR/Targeting Development ($3.516 FY05). Government Furnished Equipment (GFE): Mine Threat Procurement for Development ($0.200 FY02, $ 1.000 FY05), Nav System acquisition/integration ($2.250 FY05)

* FY04 funding in 0603782N.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.593	0.375	0.000	2.075
RDT&E Articles Quantity				

Support:

Development Support Equipment $0.825: Tactical Decision Aid Development ($0.825 FY05)

System Engineering, $0.593: Systems Effectiveness Model for MAA/AOA Preparation ($0.593 FY02).

Studies and Analysis $1.625: ABS Mission Area Analysis (MAA) ($0.375 FY03). Modeling and Simulation in support of Far-Term Development ($0.250 FY05). Mine Migration Studies in support of requirements development ($0.200 FY05). Mine Vulnerability Studies ($0.200 FY05). C4I/Data Fusion ($0.200 FY05), ABS Scalability study ($0.400 FY05)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q2131, Assault Breaching Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.953	0.000	0.000	0.010
RDT&E Articles Quantity				

Test and Evaluation:

Developmental Test and Evaluation, $1.963: Tests/studies in support of requirements development include: lane width study, mine burial/migration, mine burial effects, mine vulnerability($1.953 FY02). Navigation Operational Test Support ($0.010 FY05).

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q2131, Assault Breaching Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.297	0.287	0.000	4.200
RDT&E Articles Quantity				

Management:

Program Management Support, $2.764: ($0.344 FY02, $0.040 FY03, $2.380 FY05)

Contractor Engineering Support, $1.000: In-house contractor support (Vredenberg and Northrop Grumman) ($0.400 FY02, $0.600 FY05)

Government Engineering Support, $2.947: Technical Direction Agent/Design Agent (TDA/DA) Engineering Support of Mission Area Analysis, Analysis of Alternatives, Milestone A and B preparation, contract and acquisition documentation, Mission Needs Statement and Operational Requirements Document development, Mine magazine inventory management and shipping, contract management and tests/studies. ($1.480 FY02, $0.247 FY03, $1.220 FY05)

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q2131, Assault Breaching Systems

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY03 President's Budget:	5.235	4.698	4.811	9.906
FY04 President's Budget	5.043	0.662	0.000	17.620
Total Adjustments	-0.192	-4.036	-4.811	7.714
Summary of Adjustments				
SBIR	-0.073			
BTR Threshhold Adj.		0.699		
Economic Assumptions	-0.014	-0.026		
Misc Adjustments	-0.105	-4.709	-4.811	7.714
Subtotal	-0.192	-4.036	-4.811	7.714

(U) Schedule:

Schedule is restored to show full ABS capability development.

(U) Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603502N, Surface and Shallow Water MCM	Q2131, Assault Breaching Systems

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
0603782N Shallow Water MCM Demos			12.0*							

*$12M is ABS specific. Funding exists across the FYDP in this PE for other mine warfare efforts.

(U) E. ACQUISITION STRATEGY:

The FY03 and FY04 MAA, MNS and ORD tasks specifically complete the requirements generation process for the overarching mission area of Amphibious Operations in a Mined Environment leading to a MS B decision during 2Q FY05. The MAA will provide the foundation for the "family of systems MNSs/ORDs" required for Amphibious Operations in a Mined Environment. The FY03 and FY04 tasks will also allow the Navy to demonstrate the viability of concepts for Far Term Family of Systems capabilities and justify the need for future funding. The FY03 and FY04 funding is crucial to maintaining a pool of experienced ABS team members at the government labs and industry and for the program to maintain its inventory of threat mines that will be required for future mine lethality and vulnerability tests. The FY03 and FY04 tasks will develop ISR/Targeting systems and Navigation systems to support the Assault Breaching Mission.

(U) F. MAJOR PERFORMERS:

- NSWC, IH: Provide system engineering and test and evaluation support.
- NSWC, CSS: Provide Technical Direction Agent , systems engineering and test and evaluation support.
- TBD: Far Term ABS System contractor

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q2131, Assault Breaching Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	IH, CSS, TBD	54.554					8.085	07/05	Continuing	Continuing	N/A
Ancillary Hardware Development	WR	IH, CSS, TBD	8.100							Continuing	Continuing	N/A
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	IH, CSS	16.233							Continuing	Continuing	N/A
Training Development	WR	IH, CSS	2.000								2.000	N/A
Licenses	WR	N/A	0.800								0.800	N/A
Tooling	WR	IH, CSS, TBD	0.860								0.860	N/A
GFE	WR	IH, CSS	3.650					3.250	11/04	Continuing	Continuing	N/A
Award Fees	N/A	N/A	0.500								0.500	N/A
											0.000	
											0.000	
											0.000	
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											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			86.697	0.000		0.000		11.335		0.000	98.032	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-??**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM			PROJECT NUMBER AND NAME Q2131, Assault Breaching Systems							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support Equipment	WR	IH, CSS, TBD	11.721					0.825	11/04	Continuing	Continuing	N/A
Software Development	WR	CSS	8.037								8.037	N/A
Integrated Logistics Support	WR	IH, CSS	2.712								2.712	N/A
Configuration Management	WR	IH, CSS	3.744								3.744	N/A
Technical Data	WR	IH, CSS	2.588								2.588	N/A
Studies & Analysis	WR	IH,CSS		0.375	11/2002			1.250	11/04	Continuing	Continuing	
GFE	WR	IH, CSS	0.400								0.400	N/A
Award Fees											0.000	
											0.000	
											0.000	
											0.000	
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											0.000	
Subtotal Support			29.202	0.375		0.000		2.075		0.000	31.652	

Remarks:

R-1 SHOPPING LIST - Item No. 41

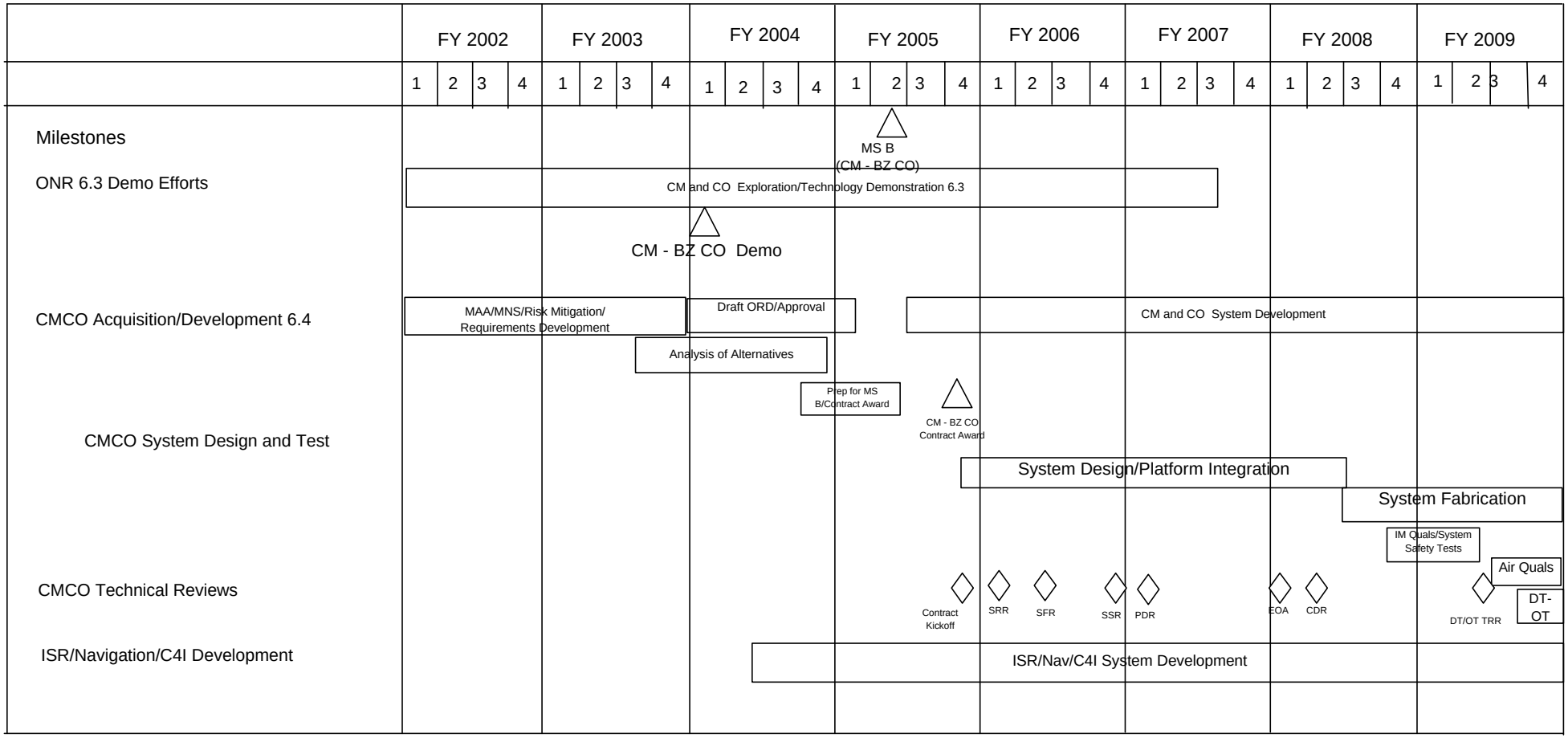
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603502N, Surface and Shallow Water MCM				PROJECT NUMBER AND NAME Q2131, Assault Breaching Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR, PD	IH, CSS, ONR, TBD	24.893					0.010	11/04	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	IH, CSS, TBD	8.655								8.655	N/A
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling	WR	IH, CSS, TBD	0.700								0.700	N/A
GFE	WR	IH, CSS, TBD	0.400								0.400	N/A
Award Fees											0.000	
Subtotal T&E			34.648	0.000		0.000		0.010			34.658	
Remarks:												
Contractor Engineering Support	CPFF	Vredenburg, Northrup Grumn	2.679	0.000				0.600	11/04	Continuing	Continuing	N/A
Government Engineering Support	WR	IH, CSS	17.884	0.247	11/02			1.220	11/04	Continuing	Continuing	N/A
Program Management Support	WR	IH, CSS, NAVSEA	11.281	0.000				2.305	11/04	Continuing	Continuing	N/A
Travel	PD	NAVSEA	0.837	0.040	11/02			0.075	11/04	Continuing	Continuing	N/A
Transportation											0.000	
SBIR Assessment	Various	Various	0.073								0.073	N/A
Subtotal Management			32.754	0.287		0.000		4.200			37.241	
Remarks:												
Total Cost			183.301	0.662		0.000		17.620		0.000	201.583	
Remarks:												

R-1 SHOPPING LIST - Item No. 41

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	0603502N, Surface & Shallow Water MCM	Q2131, Assault Breaching Systems

ABS PROGRAM SCHEDULE



R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT Program Element (PE) No. and Name				PROJECT NUMBER AND NAME Q2131, Assault Breaching Systems			
Schedule Profile: ABS	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CM and CO Exploration/Technology Demonstration 6.3(O	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
CM-BZ CO Demo			1Q					
MAA/MNS/Risk Mitigation/Requirements Devel.	1Q-4Q	1Q-4Q						
Draft ORD Development/Approval			1Q-4Q	1Q				
Analysis of Alternatives		4Q	1Q-4Q					
MS B (CM-BZ CO)				2Q				
Prep for MS B/Contract Award			4Q	1Q-2Q				
CM CO System Development				3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
CM- BZ CO Contract Award				4Q				
System Design/Platform integration				3Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q	
System Fabrication							3Q-4Q	1Q-4Q
IM Quals/System Safety Tests							4Q	1Q-2Q
Air Quals (If Air Platform System is selected during AoA)								3Q-4Q
DT-OT (continue into FY10)								3Q-4Q
Technical Reviews:								
Contract Kickoff				4Q				
SRR - System requirements Review					1Q			
SFR- System Functional Review					3Q			
SSR - System Software Review					4Q			
PDR - Preliminary Design Review						1Q		
EOA - Early Operational Assessment							1Q	
CDR- Critical Design Review							2Q	
DT/OT TRR - Test Readiness Review								2Q-4Q
ISR/NAV/C4I Development			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME Surface & Shallow Water MCM, 0603502N					PROJECT NUMBER AND NAME Unmanned Undersea Vehicle Q2094/Q2852					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**106.483**	**62.499**	**74.425**	**81.457**	**65.956**	**55.877**	**47.936**	**48.093**	**57.822**	**Continuing**	**Continuing**
RDT&E Articles Qty					**1**						**1**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

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.

The UUV project funds development 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 development/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 10 LMRSs will be procured in the FYDP begining in FY05. The LMRS Inventory Objective is TBD. 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 LMRS 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. Technologies from these systems will transition to MRUUV during the FNC demonstration year. Technology Transition agreements between the Program office and ONR have been signed.

Congress appropriated $1.5M in FY01 and $6.1M in FY02 for a National Unmanned Underwater Vehicle Test Center (NUTEC) at NUWC DIVKPT. Funds are being used to develop a program plan to define current and future UUV testing requirements. Begining in FY03 NUTEC was transferred to a new PE.

The Long-Term Mine Reconnaissance System (LMRS) is currently in development. The fabrication of a prototype system began in FY02 and will transition to fleet operations in FY05.

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	**Unmanned Undersea Vehicle Q2094/Q2852**

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	48.630	32.100	31.059	12.676
RDT&E Articles Quantity	0	0	0	0

Continued development phase and fabrication of prototype LMRS system, prototype testing and conduct TECHEVAL/OPEVAL.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.100	20.375	25.400	42.580
RDT&E Articles Quantity	0	0	0	0

Initiated MRUUV concept studies & trades, initiate requiements definition, acquistion planning and prototype designs.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.753	21.950	24.998	10.700
RDT&E Articles Quantity	0	0	0	0

UUV P3I Enginnering Studies/Prototype design, Standardization Studies, initiate transition to baseline design.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	**Unmanned Undersea Vehicle Q2095/Q2852**

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	6.016	0.000	0.000	0.000
RDT&E Articles Quantity				

NUTEC FY 2002 National UUV Test Center

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.000	0.000	0.000	0.000
RDT&E Articles Quantity				

FY 2002 UUV Standardization Studies

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 060325N**	**Unmanned Undersea Vehicle Q2094/ Q2852**

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY03 President's Controls:	61.619	76.108	16.421	22.979
FY04 President's Controls:	62.499	74.425	81.457	65.956
Total Adjustments	0.880	-1.683	65.036	42.977
Summary of Adjustments				
FY2003 SBIR	-1.343			
Misc Adjustments	2.223	-1.683	65.036	42.977
Subtotal	0.880	-1.683	65.036	42.977

(U) Schedule:
Not Applicable

(U) Technical:
Not Applicable

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**Surface & Shallow Water MCM, 0603502N**	Unmanned Undersea Vehicle Q2094/Q2852

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN PE 020481N; Line Item 217100	0.000	0.000	0.000	61.391	49.153	63.461	63.606	64.326	Continuing	Continuing

(U) E. 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 contrctors 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. 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 is conducting an AOA and has commenced acquisition planning and specification development in

(U) F. MAJOR PERFORMERS: **

Boeing - Anaheim, CA - Design and fabrication of prototype LMRS.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **Februay 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT Surface & Shallow Water MCM, 0603502N			PROJECT NUMBER AND NAME Unmanned Undersea Vehicle Q2094/Q2852						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
LMRS	CPAF/IF	Boeing	74.069	13.016	N/A	8.129	N/A	0.842	N/A	Continuing	Continuing	
Fees			5.937	2.977	N/A	1.940	N/A	1.353	N/A	Continuing	Continuing	
LMRS	Various	Various	34.168	4.951	N/A	8.317	N/A	2.893	N/A	Continuing	Continuing	
MRUUV	Various	Various	2.100	20.375	N/A	25.400	N/A	42.580	N/A	Continuing	Continuing	
UUV P31	Various	Various	9.153	21.950	N/A	24.998	N/A	10.700	N/A	Continuing	Continuing	
UUV Test center	Various	Various	7.502	0.000	N/A	0.000	N/A	0.000	N/A	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			132.929	63.269		68.784		58.368		0.000	323.350	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Surface & Shallow Water MCM, 0603502N				PROJECT NUMBER AND NAME Unmanned Undersea Vehicle Q2094/Q2852						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPAF/IF	Boeing	0.340	2.555	N/A	1.186	N/A	0.000	N/A	0.000	4.081	N/A
Operational Test & Evaluation	WR	Various	0.000	0.000	N/A	0.657	N/A	0.000	N/A	0.000	0.657	N/A
GFE/GFF	Various	Various	0.644	0.195	N/A	0.100	N/A	0.000	N/A	Continuing	Continuing	N/A
TTLRF	WR	Various	4.476	0.821	N/A	0.200	N/A	0.100	N/A	Continuing	Continuing	N/A
											0.000	
											0.000	
Award Fees											0.000	
Subtotal T&E			5.460	3.571		2.143		0.100		0.000	11.274	
Remarks:												
Contractor Engineering Support			4.204	0.660	N/A	1.000	N/A	1.000	N/A	Continuing	Continuing	
Government Engineering Support			16.030	0.965	N/A	0.869	N/A	2.661	N/A	Continuing	Continuing	
Program Management Support			4.304	0.650	N/A	0.650	N/A	0.650	N/A	Continuing	Continuing	
Overhead			6.055	5.310	N/A	8.011	N/A	3.177	N/A	Continuing	Continuing	
											0.000	
											0.000	
Subtotal Management			30.593	7.585		10.530		7.488		Continuing	Continuing	
Remarks:												
Total Cost			168.982	74.425		81.457		65.956		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 41

VIRGINIA CLASS FOT&E

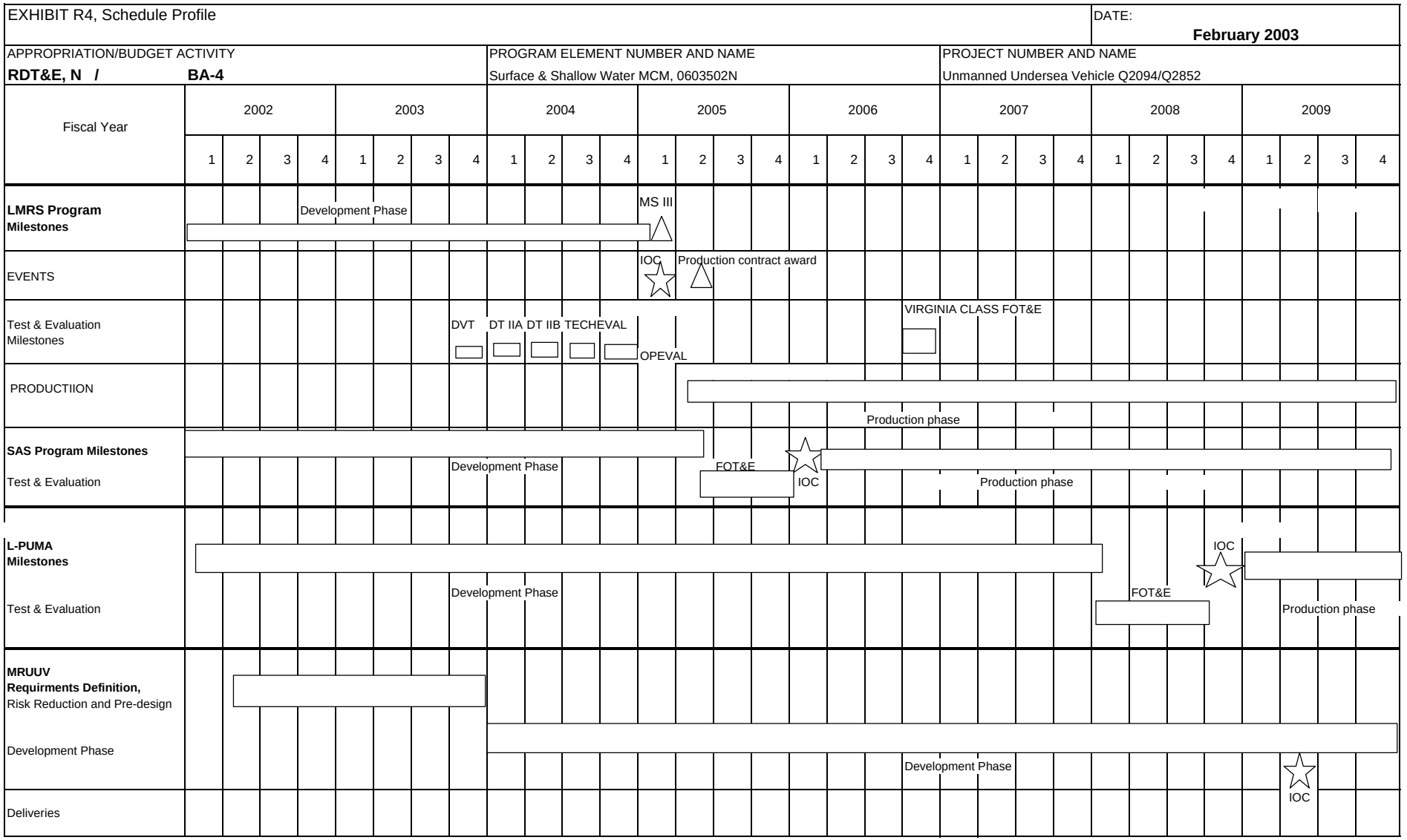
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: Surface & Shallow Water MCM, 0603502N

PROJECT NUMBER AND NAME: Unmanned Undersea Vehicle Q2094/Q2852



R-1 SHOPPING LIST - Item No. 41

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT Surface & Shallow Water MCM, 0603502N				PROJECT NUMBER AND NAME Unmanned Undersea Vehicle Q2094/Q2852			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
LMRS								
Milestone III				1Q				
IOC				1Q				
Production Contract				2Q				
DVT		4Q						
DT II A			1Q					
DTII B			2Q					
TECHEVAL			3Q					
OPEVAL			4Q					
SAS								
IOC					1Q			
FOT&E				2Q-4Q				
L-PUMA								
IOC							4Q	
FOT&E							1Q-3Q	
MRUUV								
REDESIGN PHASE	2Q							
DEVELOPMENT PHASE (21" & LARGER)			1Q					
21"MRUUV IOC								2Q

R-1 SHOPPING LIST - Item No. 41

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **SURFACE SHIP TORPEDO DEFENSE / 0603506N**				PROJECT NUMBER AND NAME Surface Ship Torpedo Defense F0225/F9037/F2854			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**18.054**	**14.321**	**48.347**	**53.730**	**52.520**	**34.964**	**24.834**	**12.867**
Tripwire Torpedo Defense F2854	**12.037**	**9.975**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Micro Electromechanical Systems F9037	**1.489**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Surface Ship Torpedo Defense F0225	**4.528**	**4.346**	**48.347**	**53.730**	**52.520**	**34.964**	**24.834**	**12.867**

Defense Emergency Response Funds (DERF) Funds: Not Applicable

A. Mission Description and Budget Line Justification: Project F0225/F2854/F9037 develops Tripwire AN/WSQ-11 Torpedo Defense System (TDS) which will provide the Tripwire towed sensors and processors to detect threat torpedo and provide launch orders for associated Anti-Torpedo Torpedo (ATT) All-Up-Round (AUR) countermeasure. The AN/WSQ-11 TDS will be integrated with the AN/SLQ-25A (NIXIE) Towed Torpedo Countermeasure. The Micro Electromechanical Systems provides an improved safe and arm capability for the ATT AUR. The AN/WSQ-11 is planned for installation on large deck ships, i.e. CVN, amphibious (LHA, LHD, LPD, LSD, AGF, LCC)/Combatant Logistic Forces (AOE), and selected DDG-51 Class ships without towed array. The AN/WSQ-11 is planned for fleet introduction in FY08 with a Block I (1X1 Capability). A salvo Block II (2X2) capability is planned for FY09 initial development. The AN/WSQ-11 TDS is closely linked with the ONR FNC program (Platform Protection and Littoral ASW) which provide advance technology inserts at key transition points in the AN/WSQ-11 schedule.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Surface Ship Torpedo Defense, 0603506N	Surface Ship Torpedo Defense F0225/F9037/F2854

B. Accomplishments/Planned Program

	FY 02 (F9037)	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.489			
RDT&E Articles Quantity				

Developed the Micro-Electromechanical safe and arm device for the ATT warhead.

	FY 02 (F0225)	FY 03 (F0225)	FY 04 (F0225)	FY 05 (F0225)
Accomplishments/Effort/Subtotal Cost	4.528	4.346	48.347	53.730
RDT&E Articles Quantity				

FY02-Continue Development of ATT AUR, and low cost afterbody components. Complete development of AN/SLQ-25A EC16 and Littoral Cables for Surface Combatants .
FY04-Continue Development of ATT AUR for Surface Ships. Conduct Prototype testing. Award ATT contract and Initiate ADM fabrication for ATT AUR.
FY05-Complete fabrication of ADM ATT AURs. Conduct In-water testing of ADM units. Initiate design of EDMs.
FY04-Continue Development of Tripwire Sensors and TDCL processor for large Deck Ships and selected DDG-51 Class Ships. Complete ADM development and Conduct in-water testing of ADM.
FY05-Continue Development of Tripwire EDM Sensors and TDCL processor. Initiate design and testing of EDMs.
FY04-05 Award Contract for AN/WSQ-11 System Integrator.

	FY 02 (F2854)	FY 03 (F2854)	FY 04 (F2854)	FY 04 (F2854)
Accomplishments/Effort/Subtotal Cost	12.037	9.975		
RDT&E Articles Quantity				

FY02-Continue Development of Tripwire Sensors and TDCL processor and for large Deck Ships and selected DDG-51 Class Ships. Develop Tripwire Prototype and Conduct Prototype testing.
FY03-Continue Development of ATT AUR. Complete development of AN/SLQ-25A EC16 and Littoral Cables for Surface Combatants .

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Surface Ship Torpedo Defense, 0603506N	Surface Ship Torpedo Defense F0225/F9037/F2854

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	18.552	3.244	3.256	4.687
Current BES/President's Budget: (FY04/05 Pres Controls)	18.054	14.321	48.347	53.730
Total Adjustments	-0.498	11.077	45.091	49.043
Summary of Adjustments				
POM 04 increases			48.160	52.097
Congressional Add		11.400		
Economic Assumtions/Bus. Process Reform	-0.113	-0.323	-1.369	-1.354
Reprogrammings	-0.094		-1.700	-1.700
SBIR/STTR Transfer	-0.291			
Subtotal	-0.498	11.077	45.091	49.043

Schedule:

See Milestone Chart

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Surface Ship Torpedo Defense, 0603506N	Surface Ship Torpedo Defense F0225/F9037/F2854

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI: 221300										
Surface Ship Torpedo Defense - SSTD			11.277	11.025	16.083	20.928	17.485	17.655		
WPN BLI: 311300										
Surface Ship Torpedo Defense - SSTD					3.978	5.815	5.921	8.270		

E. ACQUISITION STRATEGY:

The project develops Surface Ship Torpedo Defense (SSTD) capabilities using a spiral development approach. Through a process of upgrades to the existing AN/SLQ-25A NIXIE, and design of torpedo detection, classification and localization (DCL) processing and an Anti-Torpedo Torpedo (ATT), the AN/WSQ-11 System will be developed. Upgrades to the AN/SLQ-25A will be performed by the Original Equipment Manufacture (OEM). ATT development will be executed by ARL/PSU during prelimary design. A competitive contract will be awarded for the design completion and LRIP fabrication. AN/WSQ-11 System Integration of the Tripwire and ATT subsystems will be competitively awarded following Milestone B.

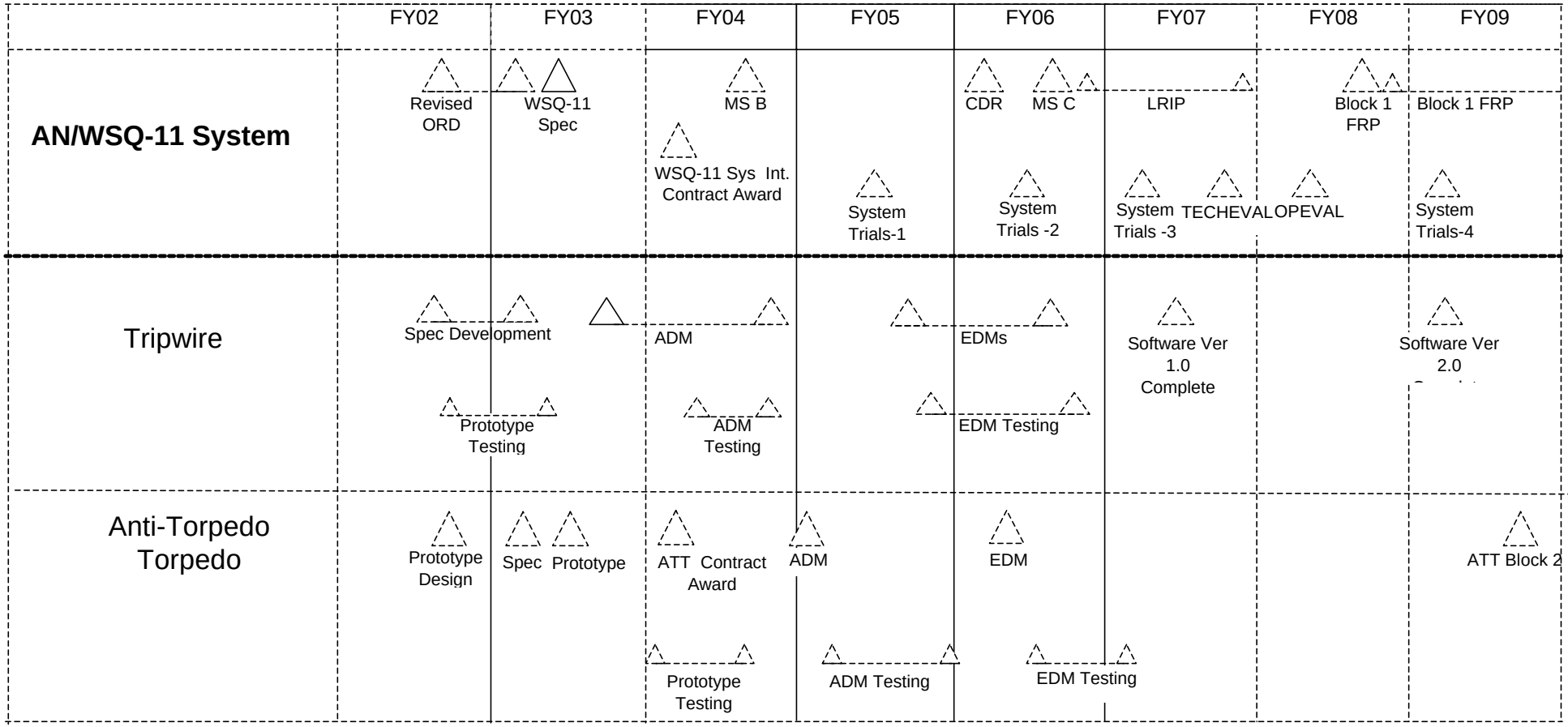
F. MAJOR PERFORMERS:

See attached R3

R-1 SHOPPING LIST - Item No. 42

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / N/BA-4**	R-1 ITEM NOMENCLATURE Surface Ship Torpedo Defense F0225/F9037/F2854



R-1 SHOPPING LIST - Item No. 42

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Surface Ship Torpedo Defense, 0603506N				PROJECT NUMBER AND NAME Surface Ship Torpedo Defense F0225/F9037/F2854						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	CPFF	ST Productions, Farmingdale, NJ		2.610	01/03						2.610	
Systems Engineering	WR	NUWC, Newport, RI		0.750	01/03	0.850	01/04	0.900	01/05		2.500	
Systems Engineering	CPFF	PSU, State College, PA		7.922	02/03	17.019	01/04	26.136	01/05		51.077	
Systems Engineering	CPFF	JHU, Baltimore , MD		0.081	02/03	0.100	01/04	0.100	01/05		0.281	
Systems Engineering	WR	NSWC, Indian Head, MD		1.250	02/03	5.270	01/04	4.250	01/05		10.770	
Systems Engineering	WR	NUWC/Keyport,WA		0.600	02/03	0.200	01/04	0.400	01/05		1.200	
Systems Engineering	WR	FTSCLANT/Norfolk, VA		0.108	02/03	0.100	01/04	0.100	01/05		0.308	
Systems Engineering WSQ-11	CPFF	Competitive Award Prime Contractor TBD				23.708	06/04	20.244	01/05		43.952	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	13.321		47.247		52.130		0.000	112.698	

Remarks:

R-1 SHOPPING LIST - Item No. 42

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Surface Ship Torpedo Defense, 0603506N			PROJECT NUMBER AND NAME Surface Ship Torpedo Defense F0225/F9037/F2854							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
Miscellaneous				0.300		0.300		0.400			1.000	
Award Fees											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			0.000	0.300		0.300		0.400		0.000	1.000	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Surface Ship Torpedo Defense, 0603506N				PROJECT NUMBER AND NAME Surface Ship Torpedo Defense F0225/F9037/F2854						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation								0.400	01/05		0.400	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.400		0.000	0.400	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support				0.600	01/03	0.650	01/04	0.650			1.900	
Travel				0.100		0.150		0.150			0.400	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.700		0.800		0.800		0.000	2.300	
Remarks:												
Total Cost			0.000	14.321		48.347		53.730		0.000	116.398	
Remarks:												

R-1 SHOPPING LIST - Item No. 42

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04**					R-1 ITEM NOMENCLATURE **0603512N - Carrier Systems Development**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**157.969**	**111.395**	**144.965**	**162.080**	**143.495**	**94.065**	**292.109**	**372.591**
29181 - Advanced Battlestation/Decision Support Syste	**0.000**	**3.521**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
42208 - CVN 21	**119.643**	**52.895**	**102.806**	**108.874**	**106.429**	**63.479**	**51.130**	**52.580**
42693 - Ship System Definition	**31.987**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
44004 - EMALS	**0.000**	**45.366**	**39.095**	**51.249**	**35.185**	**28.709**	**47.373**	**2.550**
44005 - Smart Carrier	**0.000**	**1.967**	**1.881**	**1.880**	**1.881**	**1.877**	**1.866**	**1.862**
44006 - CVNX 2	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**191.740**	**315.599**
S1722 - CV WPNS Elevator Improvements	**0.540**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
W1723 - CV Launch & Recovery Systems	**3.936**	**7.646**	**1.183**	**0.077**	**0.000**	**0.000**	**0.000**	**0.000**
W2269 - EAF Matting	**1.863**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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

- (U) (29181) -- The Advanced Battlestation/Decision support System (ABS/DSS) provides a low-risk decision support capability that has great potential for multiple Navy platforms, and possible application for other services. Expected benefits include: improved situational awareness, manpower reductions, and reductions in Total Operating Costs (TOC). An ABS/DSS demonstration is scheduled aboard USS John C. Stennis (CVN 74) in February, 2003. This effort will be the first time the system is demonstrated with a live tactical data feed and with ship's force system operators.

- (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) - Support of 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.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04**	R-1 ITEM NOMENCLATURE **0603512N - Carrier Systems Development**

- (U) (44004) - Development of an advanced technology aircraft launch system in support of the CVN 21 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 21 Class ships and will also be retrofit on existing CVNs. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability and reduced operator and maintainer workload.

- (U) (44005) - The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs (TOC).

- (U) (44006) - Development of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 21 follow-on ship. .

- (U) (S1722) -- Development of standardized, supportable and maintainable aircraft carrier weapons elevators components.

- (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. 43

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **PU 29181 - Advanced Battlestation/DSS**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.000**	**3.521**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Battlestation/Decision support System (ABS/DSS) provides a low-risk decision support capability that has great potential for multiple Navy platforms, and possible application for other services. Expected benefits include: improved situational awareness, manpower reductions, and reductions in Total Operating Costs (TOC). An ABS/DSS demonstration is scheduled aboard USS John C. Stennis (CVN 74) in February, 2003. This effort will be the first time the system is demonstrated with a live tactical data feed and with ship's force system operators.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 29181 - Advanced Battlestation/DSS**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	3.521	0.000	0.000
RDT&E Articles Quantity				

- (U) CVN 78 - Advanced Battlestation/Decision Support System (ABS/DSS) - Conduct program planning and document development, test plan preparation , test execution, performance evaluation, and software code production.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 04	**PE 0603512N - Carrier Systems Development**	**PU 29181 - Advanced Battlestation/DSS**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	0.000	0.000	0.000	0.000
Current BES/President's Budget:	0.000	3.521	0.000	0.000
Total Adjustments	0.000	3.521	0.000	0.000
Summary of Adjustments				
Congressional Add		3.600		
Congressional undistributed reductions		-0.041		
Economic Assumptions		-0.038		
	0.000	3.521	0.000	0.000

Schedule:

An ABS/DSS demonstration is scheduled aboard USS John C. Stennis (CVN 74) in February, 2003. This effort will be the first time the system is demonstrated with a live tactical data feed and with ship's force system operators.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 29181 - Advanced Battlestation/DSS**

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	135.341	395.493	1,186.564	626.010	611.771	2,983.870	3,811.809	3,074.351	Cont.	Cont.
RDT&E: 0604567N - Ship Contract Design, Live Fire T&E	122.405	181.098	138.017	140.018	115.004	91.371	50.352	27.038	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	170.706	211.314	201.239	174.239	178.357	182.055	172.532	164.732	Cont.	Cont.

E. ACQUISITION STRATEGY:

This procurement is an SBIR transition and will be awarded on a sole source basis to 21st Century Systems, Inc., Omaha, Nebraska.

F. MAJOR PERFORMERS:

21st Century Systems, Inc., Omaha, NE, Development, (FY03 Award)

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

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

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

PROJECT NUMBER AND NAME: **PU 29181 - Advanced Battlestation/DSS**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development											0.000	
Advanced Battlestation/DSS	CPFF	21st Century Systems, Inc.	0.000	3.521	02/03						3.521	
											0.000	
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											0.000	
Subtotal Product Development			0	3.521		0.000		0.000			3.521	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**			PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**			PROJECT NUMBER AND NAME **PU 29181 - Advanced Battlestation/DSS**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			0.000	3.521		0.000		0.000		0.000	3.521	
Remarks:												

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **PU 42208 - CVN 21**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**119.643**	**52.895**	**102.806**	**108.874**	**106.429**	**63.479**	**51.130**	**52.580**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides for the development of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers and the potential realization of subsystem design capabilities not currently feasible. This project transitions the most promising technologies from the Navy technology base, other government laboratories, and the private sector into specific advanced development efforts. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	55.799	42.200	21.900	13.400
RDT&E Articles Quantity				

-(U) Non-Nuclear Propulsion Plant Development - Begin and complete fabrication of prototype MTG and detailed design. Develop prototype qualification test plans. Initiate and complete MTG prototype qualification testing and shock test. Prepare for post-shock steam testing and prototype disassembly and inspection.
Complete preliminary design of the main propulsion unit and develop MPU detailed design. Continue development of testing requirements and the identification and evaluation of testing capabilities. Continue development of inputs to the integrated product model. Continue prototyping and implementation of automated workflow for construction deliverables. Continue to integrate analysis and other required functions into product model design. Continue development of mechanical and electrical systems that interface with the propulsion plant.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.900	6.613	2.043	1.720
RDT&E Articles Quantity				

- (U) Large Capacity Reverse Osmosis Desalination Plant - Develop the Large Capacity Reverse Osmosis Desalination Plant, to include the non-deployable prototype unit, based on system design requirements developed by non-nuclear propulsion plant efforts. Start construction of the non-deployable prototype unit.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	46.964	0.000	0.000	0.000
RDT&E Articles Quantity				

- (U) Aircraft Launch, Recovery & Support – Continue Electromagnetic Aircraft Launch System Program definition and Risk Reduction phase. Initiate prototype test facility design and construction. Initiate manufacture, integration and acceptance testing of prototype launch systems. Initiate CVNX-1 integration development. Provide management, system engineering, and ship integration support for all aviation related systems

Remarks: This effort was transferred to PE 0603512N, PU 44004, EMALS, effective FY03.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.923	0.000	0.000	0.000
RDT&E Articles Quantity				

- (U) 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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.080	0.000	0.000	0.000
RDT&E Articles Quantity				

- (U) 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 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.

Remarks: This effort was transferred to PE 0603512N, PU 44006, CVNX 2, effective FY03.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.977	0.000	0.000	0.000
RDT&E Articles Quantity				

- (U) 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.000	0.000	0.000	0.000
RDT&E Articles Quantity				

- (U) 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.

Remark: This effort was transferred to PE 0603512N, PU 44005, Smart Carrier, effective FY03.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	3.582	2.000	2.000
RDT&E Articles Quantity				

- (U) CVN 21 Integrated Warfare System - Perform system engineering efforts for Warfare System baseline design refinement. Conduct Warfare System Technical reviews. Monitor improvements targeted at increasing system capabilities, reducing the operational and support costs of the ship's Warfare Systems. Coordinate radar development efforts with the DD-X program regarding integration of MFR and VSR. Refine Warfare Systems Integration design and integrate into the CVN 21 ship design.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	70.103	86.054
RDT&E Articles Quantity				

- (U) CVN 21 Design and Development - Commence and continue development and transition of technologies to support the new CVN 21 Key Performance Parameters (KPPs): increased sortie generation rate, further reductions in manpower, and further recovery of weight and stability service life margins. Specific focus areas include Material and Weapons Movement Management Information Systems and various lightweight materials. Additionally, design activity will expand beyond the current primary effort to integrate a new propulsion plant and Electromagnetic Aircraft Launching System. The design build approach will be expanded to include the whole ship, and various systems and arrangements will be optimized to meet KPPs and improve overall performance. Examples include redesign of the weapons and material breakout and transfer routes, redesign of the flight deck and hangar bay configurations, elimination of an aircraft elevator, redesign of the island and various features to improve survivability.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.500	6.760	5.700
RDT&E Articles Quantity				

- (U) CVN 21 - Test & Evaluation - Determine specific developmental test requirements (DT) and related modeling and simulation and conduct actual test events. DT-A3 events will be based on CVN 21 system requirements and capabilities. Items such as test articles, including the decommissioned aircraft carrier, ex-America (CV-66), instrumentation, support equipment, threat representation, test targets and other expendables, operational force test support, models, simulations, test-beds, special requirements, and funding needs will be finalized and provided in TEMP 1610 Rev B (in support of the FY07 construction contract award). Furthermore, the NGNN T&E IPT will begin to plan and execute DT-A3 events to demonstrate the CVN 21 concepts meet required capabilities.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	124.469	81.095	84.265	87.404
Current BES/President's Budget:	119.643	52.895	102.806	108.874
Total Adjustments	-4.826	-28.200	18.541	21.470
Summary of Adjustments				
Congressional Recissions	-1.708	-0.799		
Below Threshold Reprogramming	0.600	0.000	0.000	0.000
SBIR/STTR Transfer	-3.095	0.000	0.000	0.000
Project Realignments	0.000	-48.127	-36.588	-54.351
Fund CVN 21 Requirements	0.000	0.000	80.000	95.000
Inflation	0	-0.574	-2.373	-2.347
Miscellaneous Adjustments	-0.623	21.300	-22.498	-16.832
Subtotal	-4.826	-28.200	18.541	21.470

Schedule:

The CVN 21 Basic Construction contract will be awarded in FY07 with delivery in FY14. Funding in this R&D project supports this schedule.

Technical:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	135.341	395.493	1,186.564	626.010	611.771	2,983.870	3,811.809	3,074.351	Cont.	Cont.
RDT&E: 0604567N - Ship Contract Design, Live Fire T&E	122.405	181.098	138.017	140.018	115.004	91.371	50.352	27.038	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	170.706	211.314	201.239	174.239	178.357	182.055	172.532	164.732	Cont.	Cont.

E. ACQUISITION STRATEGY:

The CVN 21 will be the first ship of the new class of aircraft carriers consisting of 12 ships. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 21 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

F. MAJOR PERFORMERS:

Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction, (FY00 Award); (FY01 Award).

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 42208 - CVN 21**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development											0.000	
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	53.306								53.306	
	CPAF	General Atomics	52.592								52.592	
	WR	NAWC Lakehurst, NJ	8.224								8.224	
	CPAF	NGNN, VA	2.270								2.270	
	Various	Miscellaneous	46.715								46.715	
Battle Damage & Recovery	WR	NSWC/CD, MD	9.429								9.429	
	CPAF	NGNN, VA	2.272								2.272	
	Various	Miscellaneous	2.008								2.008	
Propulsion Plant Development	SS,CPFF	BETTIS, PA	71.627								71.627	71.627
	CPFF	NGNN, VA	101.547	40.512	11/02	21.024	11/03	12.864	11/04		175.947	175.947
	Various	Miscellaneous	6.962	1.688	11/02	0.876	11/03	0.536	11/04	Continuing	Continuing	9.918
Reverse Osmosis Desalination Plant	CPAF	NGNN, VA	4.096	2.909	11/02	1.480	11/03	1.516	11/04	Continuing	Continuing	
	WR	NSWC/CD, MD	0.000	0.793	11/02	0.379	11/03				1.172	
	Various	Miscellaneous	0.804	2.911	11/02	0.184	11/03	0.204	11/04	Continuing	Continuing	
Manpower & Material Support	WR	NSWC/CD, MD	0.320								0.320	
	Various	Miscellaneous	2.518								2.518	
	C	Boeing, CA	0.800								0.800	
Systems Development	CPAF	NGNN, VA	4.906								4.906	
	WR	NSWC/CD, MD	3.528								3.528	
	WR	NAWC Lakehurst, NJ	0.610								0.610	
	WR	NSWC/DD	0.250								0.250	
	WR	SUPSHIPS	0.435								0.435	
	Various	Miscellaneous	6.977								6.977	
Combat & Intelligence Systems	C	NGNN, VA	9.261								9.261	
	C	Bath Iron Works	10.417								10.417	
ASW Tactical Decision Aids	C	Progeny, VA	1.5								1.500	
	WR	NUWC KP	0.256								0.256	
Smart Carrier	CPAF	NGNN, VA	0.205								0.205	
	Various	Miscellaneous	7.978								7.978	
CVNX Class Technologies	Various	Miscellaneous	0.464								0.464	
	WR	NSWC/CD, MD	2.884								2.884	
	CPFF	NGNN, VA	0.443								0.443	
Subtotal Product Development			415.604	48.813		23.943		15.120			503.480	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-??**			PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**			PROJECT NUMBER AND NAME **PU 42208 - CVN 21**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development, Cont.											0.000	
Integrated Warfare System	CP Type	N G Newport News	0.000								0.000	
	SPD	SPAWAR	0.000	0.270	11/02	0.270	11/03	0.270	11/04	Continuing	Continuing	
	WX	NAVAIR	0.000	0.936	11/02	0.650	11/03	0.650	11/04	Continuing	Continuing	
	WR	NSWC Dahlgren	0.000	1.323	11/02	1.080	11/03	1.080	11/04	Continuing	Continuing	
	WR	NSWC Dam Neck	0.000	0.165	11/02	0.000	11/03	0.000	11/04	Continuing	Continuing	
	Various	Miscellaneous	0.000	0.888	11/02	0.000		0.000		Continuing	Continuing	
CVN 21 Design & Development	CP Type	NGNN	0.000			45.103	11/03	50.054	11/04	Continuing	Continuing	
	PD	ONR	0.000			10.000	11/03	15.000	11/04	Continuing	Continuing	
	WR	NSWC Carderock	0.000			8.000	11/03	10.000	11/04	Continuing	Continuing	
	PD	NAVSUP	0.000			3.000	11/03	5.000	11/04	Continuing	Continuing	
	WX	NAVAIR	0.000			3.000	11/03	5.000	11/04	Continuing	Continuing	
	WR	NSWC Dahlgren				1.000	11/03	1.000	11/04			
Subtotal Product Development			0.000	3.582		72.103		88.054		0.000	163.739	

Remarks:

R-1 SHOPPING LIST - Item No. 43

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2003**

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

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

PROJECT NUMBER AND NAME: **PU 42208 - CVN 21**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Aircraft Launch Recovery & Support	CPAF	Miscellaneous	2.519								2.519	
CVN 21 Class	PD	SUPSHIP Newport News	0.000	0.500	11/02					Continuing	Continuing	
	CP Type	NGNN	0.000			2.750	11/03	2.250	11/04	Continuing	Continuing	
	SPD	SPAWAR	0.000			1.165	11/03	0.785	11/04	Continuing	Continuing	
	WX	NAVAIR	0.000			0.300	11/03	0.300	11/04	Continuing	Continuing	
	WR	NSWC Corona	0.000			0.450	11/03	0.425	11/04	Continuing	Continuing	
	WR	NSWC Dahlgren	0.000			0.465	11/03	0.465	11/04	Continuing	Continuing	
	Various	Miscellaneous	0.000			0.930	11/03	0.775	11/04	Continuing	Continuing	
Operational Test & Evaluation	WR	COMOPTEVFOR	0.000			0.700	11/03	0.700	11/04	Continuing	Continuing	
Live Fire Test & Evaluation										Continuing	Continuing	
Test Assets										Continuing	Continuing	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			2.519	0.500		6.760		5.700		0.000	15.479	

Remarks:

Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks:

Total Cost			418.123	52.895		102.806		108.874		0.000	682.698	

Remarks:

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **PU 44004 - EMALS**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.000**	**45.366**	**39.095**	**51.249**	**35.185**	**28.709**	**47.373**	**2.550**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 44004 - EMALS**

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	45.366	39.095	51.249
RDT&E Articles Quantity				

EMALS - Continue and complete EMALS Program Definition and Risk Reduction phase. (FY03) Complete prototype test facility construction. Complete full scale EMALS system manufacture, subsystem integration, and system installation at NAVAIR Lakehurst. Conduct installation checkout and commissioning tests. Conduct full scale, full power, half-length EMALS demonstration testing and technical evaluation using deadloads. Continue CVN 21 integration development. Provide management, systems engineering, test and ship integration support. (FY04) Complete full scale, full power, half-length EMALS demonstration testing and technical evaluation using deadloads. Analyze test data, proposed contractor production system configurations and program proposals. Select contractor for and begin Engineering and Manufacturing Development phase. Conduct Systems Requirements review. Initiate production design effort. Conduct Preliminary Design Review. Continue CVN 21 integration development. Provide management, systems engineering, test and ship integration support. (FY05) Continue Engineering and Manufacturing development phase. Complete Critical Design Reviews and initiate manufacture of production representative system for Technical Evaluation and Operational assessment. Continue CVN 21 integration development. Provide management, systems engineering, test and ship integration support.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-04	**PE 0603512N - Carrier Systems Development**	**PU 44004 - EMALS**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	0.000	0.000	0.000	0.000
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	0.000	45.366	39.095	51.249
Total Adjustments	0.000	45.366	39.095	51.249
Summary of Adjustments				
Transfer from PU42208		46.127	40.000	52.351
Congressional rescissions		-0.269		
Inflation		-0.492	-0.902	-1.105
Misc. Adjustments			-0.003	0.003
Subtotal	0.000	45.366	39.095	51.249

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

Schedule:

Not Applicable.

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**	PROGRAM ELEMENT NUMBER AND NAME **PE 0603512N - Carrier Systems Development**	PROJECT NUMBER AND NAME **PU 44004 - EMALS**

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	135.341	395.493	1,186.564	626.010	611.771	2,983.870	3,811.809	3,074.351	Cont.	Cont.
RDT&E: 0604567N - Ship Contract Design, Live Fire T&E	122.405	181.098	138.017	140.018	115.004	91.371	50.352	27.038	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	170.706	211.314	201.239	174.239	178.357	182.055	172.532	164.732	Cont.	Cont.

E. ACQUISITION STRATEGY:

The CVN 21 will be the first ship of the new class of aircraft carriers consisting of 12 ships. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 21 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

F. MAJOR PERFORMERS:

Northrop Grumman, Sunnyvale, CA, EMALS Design and Development, (FY00 Award)
General Atomics, La Jolla, CA, EMALS Design and Development, (FY00 Award)
NAWC, Lakehurst, NJ, EMALS Interface.

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**			PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**			PROJECT NUMBER AND NAME **PU 44004 - EMALS**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development												
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman		14.000	11/02	4.150	11/03			Continuing	Continuing	Continuing
	CPAF	General Atomics		22.500	11/02	6.840	11/03			Continuing	Continuing	Continuing
	CPIF	EMALS Contractor TBD				23.509	11/03	47.578	11/04	Continuing	Continuing	Continuing
	WR	NAWC Lakehurst, NJ		2.566	11/02	2.546	11/03	2.621	11/04	Continuing	Continuing	Continuing
	CPAF	NNS, VA		1.000	11/02	1.000	11/03	1.000	11/04	Continuing	Continuing	Continuing
	Various	Miscellaneous		0.250	11/02					Continuing	Continuing	Continuing
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			0.000	40.316		38.045		51.199		0.000	129.560	

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**			PROGRAM ELEMENT **PE 0603512N - Carrier Systems Development**			PROJECT NUMBER AND NAME **PU 44004 - EMALS**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Aircraft Launch, Recovery & Support	WR	Lakehurst NJ		5.000	11/02	1.000	11/03			Continuing	Continuing	Cont.
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.000	5.000		1.000		0.000		0.000	6.000	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.050		0.050		0.050			0.150	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.050		0.050		0.050		0.000	0.150	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												
Total Cost			0.000	45.366		39.095		51.249		0.000	135.710	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME 44005 - Smart Carrier			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**1.967**	**1.881**	**1.880**	**1.881**	**1.877**	**1.866**	**1.862**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	**0603512N - Carrier Systems Development**	**44005 - Smart Carrier**

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.967	1.881	1.880
RDT&E Articles Quantity				

In Fiscal Year 2003, completed software development for, and initiated/completed test, evaluation and demonstration/validation of, Aviation Fuels (JP-5) Automation and In-Line Fuel Monitoring for Smart Carrier technology insertion on USS ABRAHAM LINCOLN (CVN 72) and USS GEORGE WASHINGTON (CVN 73). Efforts continue in Fiscal Years 2004 and 2005 to identify, evaluate, demonstrate, install, test and measure the effectiveness of revised processes and selected technologies with the highest potential to meet Aircraft Carrier goals for manpower and Total Ownership Cost (TOC) reductions.
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603512N - Carrier Systems Development**	**44005 - Smart Carrier**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002*	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	0.000	0.000	0.000	0.000
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	0.000	1.967	1.881	1.880
Total Adjustments	0.000	1.967	1.881	1.880
Summary of Adjustments				
Transfer from PU 42208		2.000	2.000	2.000
Congressional Recissions		-0.012		
Inflation		-0.021	-0.043	-0.041
Misc. Adjustments			-0.076	-0.079
Subtotal	0.000	1.967	1.881	1.880

Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208

Schedule: Not Applicable

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603512N - Carrier Systems Development**	**44005 - Smart Carrier**

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
098100 Items Under $5 million Smart Carrier	33.860	46.653	7.317	36.696	24.244	27.266	21.806	24.146	56.500	278.488

E. ACQUISITION STRATEGY:

Investigate, demonstrate, and implement available technologies to deliver a robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment to reduce workload, manpower requirements, and Total Ownership Costs (TOC).

F. MAJOR PERFORMERS:

Naval Surface Warfare Center, Carderock Division, Philadelphia, PA performs software development, test and evaluation, integration and program management to include training development and integrated logistics support development. Funds are typically issued in the first fiscal quarter.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT **0603512N - Carrier Systems Development**			PROJECT NUMBER AND NAME **44005 - Smart Carrier**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost*	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration	WR	NSWCCD, Philadelphia, PA		0.200	11/02	0.100	11/03	0.100	11/04	0.500	0.900	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.200		0.100		0.100		0.500	0.900	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												
Development Support											0.000	
Software Development	WR	NSWCCD, Philadelphia, PA		1.067	11/02	0.931	11/03	0.880	11/04	3.486	6.364	
Training Development	WR	NSWCCD, Philadelphia, PA		0.050	11/02	0.050	11/03	0.080	11/04	0.300	0.480	
Integrated Logistics Support	WR	NSWCCD, Philadelphia, PA		0.100	11/02	0.150	11/03	0.120	11/04	0.600	0.970	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	1.217		1.131		1.080		4.386	7.814	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT **0603512N - Carrier Systems Development**				PROJECT NUMBER AND NAME **44005 - Smart Carrier**						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost *	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Philadelphia, PA		0.300	11/02	0.400	11/03	0.450	11/04	1.600	2.750	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.300		0.400		0.450		1.600	2.750	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	WR	NSWCCD, Philadelphia, PA		0.250	11/02	0.250	11/03	0.250	11/04	1.000	1.750	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.250		0.250		0.250		1.000	1.750	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												
Total Cost			0.000	1.967		1.881		1.880		7.486	13.214	
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208												

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603512N Carrier Systems Development				PROJECT NUMBER AND NAME W1723 CV Launch and Recovery Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**3.936**	**7.646**	**1.183**	**0.077**				
RDT&E Articles Qty		**2**						

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:

- (U) Advanced Recovey Control (ARC) System: The ARC system development effort will replace the existing control valve and valve actuation control system on the MK7 arresting gear, providing enhanced performance, improved reliability and maintainability, and restoring operational margins of safety.
- (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.

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603512N Carrier Systems Development	W1723 CV Launch and Recovery Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.936	7.439	1.056	
RDT&E Articles Quantity		2		

ARC
Developed ARC System Specification, contract Statement of Work, and Request for Proposal. Conducted source selection process, completed Milestone B review and awarded development contract. Conducted testing to characterize existing Constant Run Out Valve (CROV) performance in support of ARC control system development. Completed System Requirements Review and Preliminary Design Review. Provided engineering and management support.
Complete Preliminary Design Review and Critical Design Review and fabricate/deliver two (2) test articles. Conduct developmental testing of test articles on arresting gear. Conduct development testing using deadloads at the Jet Car Track Site (JCTS) and aircraft at the Runway Arrested Landing Site (RALS). Conduct rapid cycle reliability testing and environmental testing. Complete Tech Evaluation and achieve Milestone C.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.207	0.127	0.077
RDT&E Articles Quantity				

CREI
(Arresting Gear Fairlead Sheaves) - Select candidate materials and samples and conduct laboratory testing. Conduct design and manufacture prototype of CREI Sheaves. Conduct rapid cycle wear testing, dead load testing at the JCTS and aircraft testing at RALS, and environmental testing of developmental sheaves. Provide engineering and management support to the program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603512N Carrier Systems Development	W1723 CV Launch and Recovery Systems

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	5.344	7.818	1.221	0.080
Current BES/President's Budget	3.936	7.646	1.183	0.077
Total Adjustments	-1.408	-0.172	-0.038	-0.003
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.045		
Congressional rescissions	-0.011			
SBIR/STTR Transfer	-0.011			
Economic Assumptions	-0.011	-0.044	-0.029	-0.002
Management Reform Initiative	-0.047			
Reprogrammings	-1.330			
Sponsor/FMB/NAVAIR Adjustments	0.002	-0.083	-0.009	-0.001
Congressional increases				
Subtotal	-1.408	-0.172	-0.038	-0.003

(U) Schedule:

Deferral of the ARC System program contract award from 1Q/02 to 3Q/02 was due to a decision to pursue ARC as an ACAT IVM program. This change has caused the following delays in the ARC System program: CDR has moved from 1Q/03 to 3Q/03 and DT has moved from 2Q/03 to 1Q/04. ARC PDR is scheduled for 1Q/03 and ARC MS C is scheduled for 3Q/04.

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603512N Carrier Systems Development	W1723 CV Launch and Recovery Systems

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN Aircraft Launch & Recovery Equipment, 43SJ	26.835	18.949	20.277	21.319	31.883	33.077	33.714	34.323	Continuing	Continuing

(U) E. ACQUISITION STRATEGY:

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. NAWCAD LKE 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: The A/G Fairlead Sheave development effort will be competitively awarded to industry to develop sample materials and perform laboratory testing for wear resistance.
Based on the results of the testing, one material and heat treatment process will be selected and prototype sheaves manufactured and tested on two arresting gear engines at NAVAIR Lakehurst.

(U) F. MAJOR PERFORMERS:

Major Performer	Location	Description of Work	FY03 Amt	FY03 Award Date	FY04 Amt	FY04 Award Date	FY05 Amt	FY05 Award Date
NAWCAD	Lakehurst, NJ	Systems Engineering and Developmental Test and Evaluation Primary H/W Development	2.777	11/02	0.883	11/03	0.077	11/04
Northrup Grumman	Sykesville, MD	Primary H/W Development	4.869	12/02	0.300	11/03		

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603512N Carrier Systems Development				PROJECT NUMBER AND NAME W1723 CV Launch and Recovery Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Northrup Grumman,	3.942	4.869	11/02	0.300	11/03				9.111	8.603
Primary Hardware Development	WX	NAWCAD Lakehurst, NJ		0.685	11/02						0.685	
Systems Engineering	WX	NAWCAD Lakehurst, NJ	24.460	1.627	11/02	0.637	11/03				26.724	
Award Fees												
Subtotal Product Development			28.402	7.181		0.937					36.520	
Remarks:												
Subtotal Support												
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603512N Carrier Systems Development			PROJECT NUMBER AND NAME W1723 CV Launch and Recovery Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental T&E (ARC)	WX	NAWCAD Lakehurst, NJ		0.335	11/02	0.104	11/03				0.439	
Developmental T&E (CREI)	WX	NAWCAD Lakehurst, NJ		0.080	11/02	0.127	11/03	0.077	11/04		0.284	
Award Fees												
Subtotal T&E				0.415		0.231		0.077			0.723	
Remarks:												
Travel	WX	NAWCAD Lakehurst, NJ		0.050		0.015					0.065	
Subtotal Management				0.050		0.015					0.065	
Remarks:												
Total Cost			28.402	7.646		1.183		0.077			37.308	
Remarks:												

R-1 SHOPPING LIST - Item No. 43

CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603512N Carrier Systems Development	W1723 CV Launch and Recovery Systems

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ARC Acquisition Milestones			MS B								MS C				First Deployment		IOC															
Prototype Phase	Component Advance Development			System Development & Demonstration																												
System Development				SRR	PDR		CDR H/W-S/W				FCA / PCA	PRR																				
EDM Delivery of 2 units									Two EDM Units																							
Software Delivery																																
ARC Test & Evaluation Milestones																																
Development Test								TRR																								
Operational Test											TECHEVAL																					
ARC Production Milestones																																
FRP										FRP I Start																						
Deliveries								2																								

R-1 SHOPPING LIST - Item No. 43

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603512N Carrier Systems Development				PROJECT NUMBER AND NAME W1723 CV Launch and Recovery Systems			
Schedule Profile - ARC	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
System Requirements Review (SRR)	4Q							
Milestone B (MSB)	3Q							
Contract Preparation	1Q-3Q							
Contract Award	3Q							
Preliminary Design Review (PDR)		1Q						
System Development	4Q	1Q-4Q	1Q-2Q					
Critical Design Review (CDR) H/W & S/W		3Q						
Test Readiness Review (TRR)			1Q					
Eng Dev Model (EDM) Delivery		4Q						
Software Delivery		4Q						
Preproduction Readiness Review (PRR)			2Q					
Milestone C (MS C)			3Q					
Functional Configuration Audit (FCA)			1Q					
Technical Evaluation (TECHEVAL)			1Q-2Q					
Physical Configuration Audit (PCA)			1Q					
IOC				4Q				
Full Rate Production (FRP) Decision			3Q					
Full Rate Production Start			3Q					
First Deployment				3Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0603512N Carrier Systems Development				PROJECT NUMBER AND NAME W2269 EAF Matting			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.863**							
RDT&E Articles Qty								

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 applications.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0603512N Carrier Systems Development	W2269 EAF Matting

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.863			
RDT&E Articles Quantity				

M-31
Demonstrated compatability and performance thresholds with deadloads and aircraft. Completed developmental testing (DT) and achieved Milestone III. Provided engineering and management support to the program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0603512N Carrier Systems Development	W2269 EAF Matting

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	0.851			
Current BES/President's Budget	1.863			
Total Adjustments	1.012	0.000	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.002			
Economic Assumptions	-0.005			
Management Reform Initiative	-0.008			
Reprogrammings	1.027			
Sponsor/FMB/NAVAIR Adjustments				
Congressional increases				
Subtotal	1.012	0.000	0.000	0.000

(U) Schedule:

The delay in delivery of prototype caused Final DT to move from 1Q-4Q/01 to 2Q/02. Required additional aircraft testing and validation of reliability and maintainability efforts caused the M31 MS III approval move from 2Q/02 TO 3Q/02.

(U) Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0603512N Carrier Systems Development	W2269 EAF Matting

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN (Expeditionary Airfields 43SE)									Continuing	

(U) E. ACQUISITION STRATEGY:

The advanced lightweight mat acquisition strategy envisioned 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.

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.

(U) F. MAJOR PERFORMERS: Not Applicable

Major Performer	Location	Description of Work	FY03 Amt & Award Date	FY04 Amt & Award Date	FY05 Amt & Award Date

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**280.795**	**256.366**	**20.431**	**19.251**	**33.646**	**23.513**	**21.763**	**22.132**
32465/DC/Survivability	**4.928**	**5.665**	**6.515**	**6.268**	**4.198**	**2.141**	**2.146**	**2.177**
32467/AGS - Advanced Gun System	**130.767**	**105.791**	*** **0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
32468/Undersea Warfare (USW)	**24.505**	**20.093**	**1.435**	**1.684**	**4.207**	**2.002**	**0.000**	**0.000**
32469/ Open Systems Architecture (OSA)	**5.391**	**4.499**	**3.765**	**3.504**	**2.571**	**2.070**	**2.103**	**2.137**
32470/Integrated Topside Design (ITD)	**5.239**	**4.129**	**3.711**	**3.638**	**2.823**	**0.873**	**0.874**	**0.884**
32471/Integrated Power Systems (IPS)	**100.910**	**97.559**	**5.005**	**4.157**	**9.796**	**9.607**	**9.699**	**9.866**
32858/MTTC/IPI	**5.768**	**8.216**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
34019/Radar Upgrades	**0.000**	**0.000**	**0.000**	**0.000**	** **10.051**	**6.820**	**6.941**	**7.068**
39038/Automated Maintenance Environment	**3.287**	**3.325**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
39182/Advanced Variable Speed Drive	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
39183/Electro-Magnetic Launcher	**0.000**	**3.179**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
39185/Airbag Technology	**0.000**	**2.933**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Note: * (U) FY 04 and out funding for this project was reprogrammed to BA-5 PE 0604300N, AGS Project 34009.

****(U) FY 06 and out funding for this project was reprogrammed from BA-5 PE 0604300N, MFR Project 32466.**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE focuses on the development of shipboard system components and technologies for the future surface combatant family of ships. The Radar Upgrade funds future upgrades/technology insertion efforts for the Multi Function Radar (MFR)/Volume Search Radar (VSR) radar suite. The MTTC/IPI Congressional add is to perform Manufacturing Technology (MANTECH) studies at the McConnell Technology Transition Center, operated by Innovative Productivity, Inc. (MTTC/IPI). The funds are to work with Navy, DoD, government, laboratories, universities, and industry to identify innovative technologies, processes and concepts that can help Navy activities and contractors, while reducing operating costs and increasing product quality . The Congressional add for Automated Maintenance Environment is an effort that 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. The Advanced Variable Speed Drive (AVSD) Congressional add initiative will re-engineer the high voltage VSD technology for application to the 450 VAC operating level. The Electro-Magnetic Launcher Congressional add initiative will be used to demonstrate the feasibility of a kinetic energy electromagnetic railgun. The Airbag Technology Congressional add focuses on the development and evaluation of replacing the current high-pressure air system used to launch over-the-side torpedoes with commercial off the shelf automobile air bag inflators for launch energy.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32465/DC/Survivability			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**4.928**	**5.665**	**6.515**	**6.268**	**4.198**	**2.141**	**2.146**	**2.177**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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) advanced DC and auxiliary system architectures and control methods that enable automated isolation, reconfiguration and fire suppression actions after damage; and 5) low cost ship shock testing methods that eliminate the need for costly environmental assessments and at-sea measures.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32465/DC/Survivability

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.561	1.100	1.500	1.000
RDT&E Articles Quantity	0	0	0	0

(U) Supported development of survivable 450 volt electrical system architectures/components that enable uninterrupted damage control operations and continued combat capability after damage. For FY 03, complete development of control logic for rapidly isolating a fault and integrate software with commercial control technology; conduct laboratory demonstration and transition to the DDG 51 program. In FY 04, develop survivable 4160 volt electrical architectures; and for FY 05, develop a bus level control alogorithum for isolating faults and initiate plans for live fire demonstration tests.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.532	1.100	1.800	1.300
RDT&E Articles Quantity	0	0	0	0

(U) Supported development of survivable automated firefighting systems that enable automated isolation, reconfiguration and fire suppression following damage. In FY 03, conduct survivability demonstration of a candidate automated fire suppression system piping architecture under realistic live ordnance and shipboard conditions and conduct laboratory fire suppression effectiveness testing of alternative water mist nozzle configuarations that provide for direct cooling in the blast area. For FY 04 and FY 05, initiate and install a prototype system aboard the ex-USS SHADWELL located in Mobile, Alabama and demonstrate performance under realistic fire threat and shipboard conditions ; transition data to ship acquisition programs.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.400	1.198	0.800	0.800
RDT&E Articles Quantity				

(U) Supported development of electronics and machinery shock isolation systems (structural support raft and mounts) that enable continued operation after close-in underwater explosion. Developed an advanced shock mount concept that provides for an ultra low shock environment ensuring a very high probability of equipment survival. In FY 03, conduct an underwater explosion shock test employing a raft, shock mounts and representative electronic equipment to demonstrate equipment survivability . For FY 04, develop a low-cost, portable shock testing device/ machine for rapidly shock qualifying commercial of the shelf (COTS) equipment in support of ship acquisition programs and technology refresh upgrades. In FY 05, demonstrate the ability of the devices to replicate the shock environment and conduct tests using representative COTS equipment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32465/DC/Survivability

37653

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.850	1.167	1.515	1.897
RDT&E Articles Quantity	0	0	0	0

(U) Continued demonstrations of real-time, closed loop degaussing control system aboard USS Higgins, DDG 76; conduct rangings to monitor stability of control algorithm/ system and transition to ship acquisition programs. In FY 03, initiate development of a software upgrade that provides for a low signature during rolling by compensating for eddy currents. In FY 04, continue development of the eddy current software upgrade and initiate development of a real-time tactical decision aid that provides safe operating areas as a function of mine threat. In FY 05, initiate development of a closed loop de-amping system that will reduce the near-field underwater corrosion-related magnetic and electric field signatures emanating from a steel hull surface ship. Initiate plans for installation aboard an operational destroyer. Also, continue development of the real time tactical decision aid and eddy current upgrade.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.500	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Spiral Development Study to assess surface combatant force capabilities and to conduct survivability assessments.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.595	1.100	0.900	0.600
RDT&E Articles Quantity	0	0	0	0

(U) Continued development of the ship survivability design modeling and simulation program, Advanced Survivability Assessment Program (ASAP). For FY 03, complete development of crew casualty and electrical models. In FY 04 and FY 05, conduct verification and validation and develop new weapons effect and recoverability models.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32465/DC/Survivability

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.671
RDT&E Articles Quantity	0	0	0	0

(U) Initiate development of environmentally safe shock testing methods for conducting at-sea, or pier side ship shock trials that eliminate the need for costly environmental impact assessments and measures. Initiate demonstration tests of alternative methods to characterize the pressure time-history verses conventional explosives.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.490	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Closed-out the composite pump development contract.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity	0	0	0	0

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32465/DC/Survivability

C. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	4.991	5.792	6.928	6.671
Current BES/President's Budget: (FY04 Pres Controls)	4.928	5.665	6.515	6.268
Total Adjustments	-0.063	-0.127	-0.413	-0.403
(U)Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.037	-0.034		
Congressional rescissions				
SBIR/STTR Transfer	-0.012			
Economic Assumptions	-0.014	-0.032		
Reprogrammings				
Miscellaneous Minor Adjustments		-0.061	-0.413	-0.403
Congressional increases				
Subtotal	-0.063	-0.127	-0.413	-0.403

(U)Schedule:
Not Applicable

(U)Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 32465/DC/Survivability	

D. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineering	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. ACQUISITION STRATEGY:

F. (U) MAJOR PERFORMERS:

(U) Government Field Activities - NSWC Carderock

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32465/DC/Survivability						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF	DD(X) Design Agent	1.500	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.500	
Ancillary Hardware Development												
Product Development	WR	NSWC CD Bethesda, MD	7.868	4.841	11/02	6.515	12/03	6.268	12/04	CONT	CONT	
	Various	Other Contractors	5.251	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
Ship Integration												
Ship Suitability												
Systems Engineering												
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			14.619	4.841		6.515		6.268		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32465/DC/Survivability						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support	GSA	Anteon Arlington, VA	0.000	0.234	01/03	0.000	N/A	0.000	N/A	CONT	CONT	
Government Engineering Support	VAR	Othe Gov't Act	0.000	0.590	02/03	0.000	N/A	0.000	N/A	CONT	CONT	
Program Management Support	WR	NSWC CD Bethesda, MD	0.075	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.075	
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.075	0.824		0.000		0.000		0.000	0.899	
Remarks:												
Total Cost			14.694	5.665		6.515		6.268		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

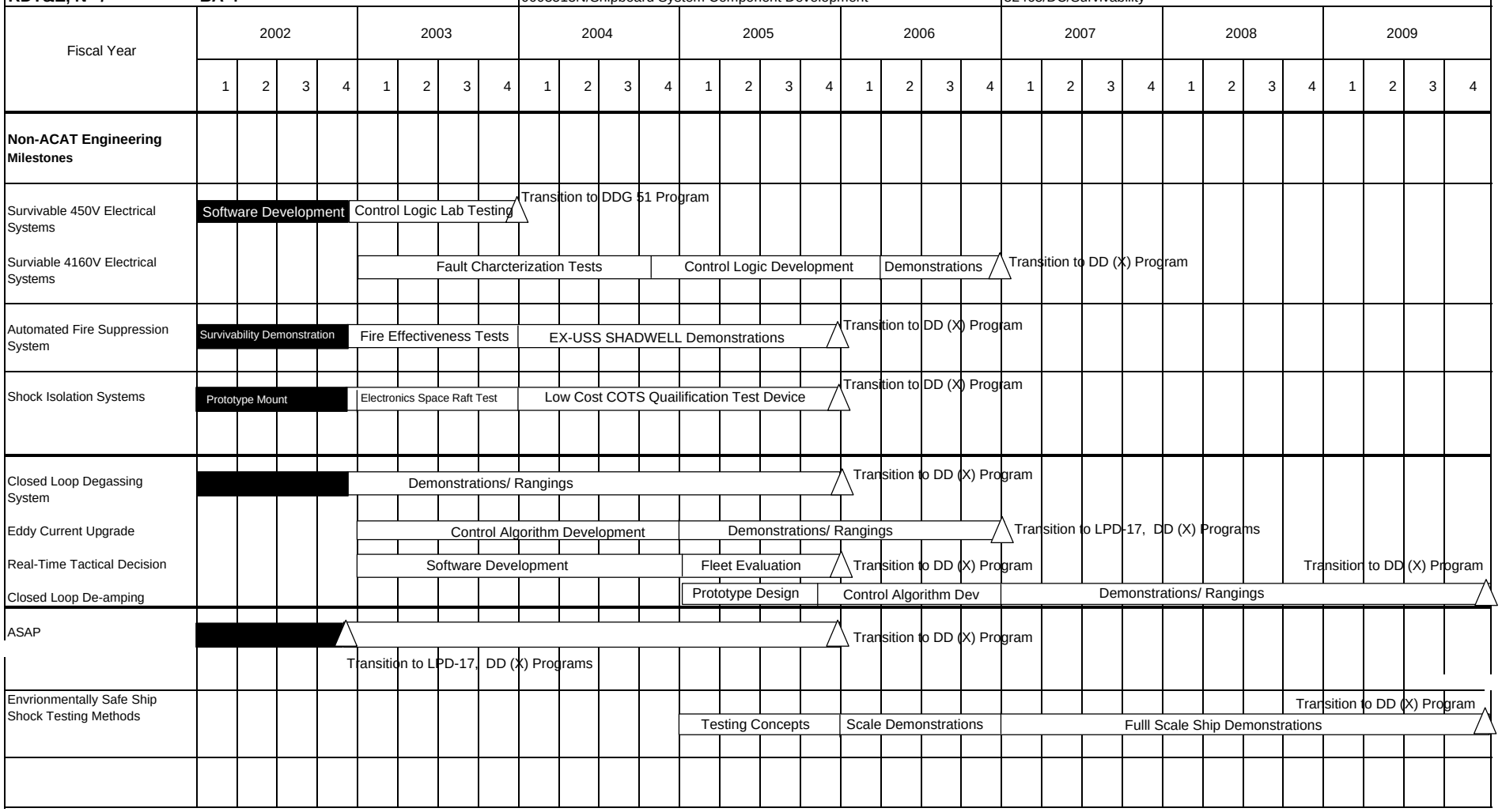
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 32465/DC/Survivability



R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 200anuary 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32465/DC/Survivability			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Survivable 450 Volt Software Development Plan	4Q							
450 Volt Electrical Control Logic		3Q						
4160 Fault Characterization Tests			4Q					
4160 Volt Electrical Control Logic				4Q				
4160 Volt System Level Live Ordnance Demonstrations					4Q			
Automated Fire Suppression Piping Architecture Demo		2Q						
Fire Suppression Effectiveness Lab Demonstrations		4Q						
EX-USS SHADWELL Demonstrations			4Q	3Q				
Ultra Low G Shock Mount	4Q							
Electronics Space Raft Test		4Q						
Low Cost COTS Qualification Test Devices				4Q				
Closed Loop Degaussing Rangings	2Q	2Q	2Q-4Q					
Eddy Current Compensation Control Algorithm			4Q					
Eddy Current Demonstrations				4Q	4Q			
Tactical Decsion Aid Prototype			4Q					
De-Amping System Prototype Design				4Q				
De-Amping System Control Algorithm					4Q			
De-Amping System Prototype Installation						4Q		
De-Amping System Demonstrations							2Q-4Q	2Q
ASAP Crew Casualty and Electrical Models		4Q						
ASAP V&V			4Q					
ASAP Recoverability/ New Weapons Effects models				4Q				
Envrionmentally Safe Ship Shock Testing Concepts				4Q				
Alternative Test Method Scale Demonstrations					2Q-4Q			
Full Scale Ship Shock Demonstrations						4Q	2Q	2Q

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32467/AGS-Advanced Gun System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**130.767**	**105.791**	**0.000***	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**

Note: * (U) FY04 and out funding for this project was reprogrammed to BA-5 PE 0604300N, DD(X) Total Ship Systems Engineering, AGS Project 34009.

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 03.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32467/AGS-Advanced Gun System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	26.635	24.359	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Initiated AGS System design and DD(X) Spiral Development Study. In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	51.269	59.607	0.000	0.000
RDT&E Articles Quantity	0	2	0	0

(U) Commenced EDM fabrication for Gun, magazine, and Control system. In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	34.237	9.475	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Continued Risk Reduction Phase for AGS Long Range Land Attack Projectile (LRLAP). In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32467/AGS-Advanced Gun System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	15.926	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Validated and verified the suitability and effectiveness of Validation & Verification (V&V) tools for AGS and AGS munitions. In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.700	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Continued EDM test fixture development. In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	12.350	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Initiate LRLAP EDM Development and Testing. In FY04 and out, funding was reprogrammed to PE 0604300N, Project 34009.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32467/AGS-Advanced Gun System

C. (U)PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	139.031	108.184	52.158	47.736
Current BES/President's Budget: (FY04 Pres Controls)	130.767	105.791	0.000	0.000
Total Adjustments	-8.264	-2.393	-52.158	-47.736
(U)Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.982	-0.631		
Congressional rescissions				
POM-04 realignment from DD(X) BA-4 budget to BA-5			-52.158	-47.736
FFRDC Reduction	-0.025	-0.007		
SBIR/STTR Transfer	-5.446			
Economic Assumptions	-0.367	-0.607		
Reprogrammings	-1.000			
Miscellaneous Minor Adjustments	-0.444	-1.148		
Subtotal	-8.264	-2.393	-52.158	-47.736

(U) Schedule:

Not Applicable

(U)Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32467/AGS-Advanced Gun System

D. (U) PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineerir	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. (U)ACQUISITION STRATEGY:

(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, and Phase II - Initial Prototype Development. Downselection to a single DD(X) Design Agent occurred in the Third Quarter, FY 02 to begin Phase III. The AGS EDM development will continue under this contract.

F. (U)MAJOR PERFORMERS:

(U) Contractors - United Defense Limited Partnership, Northrop Grumman Ship Systems, Bath Iron Works

CLASSIFICATION:

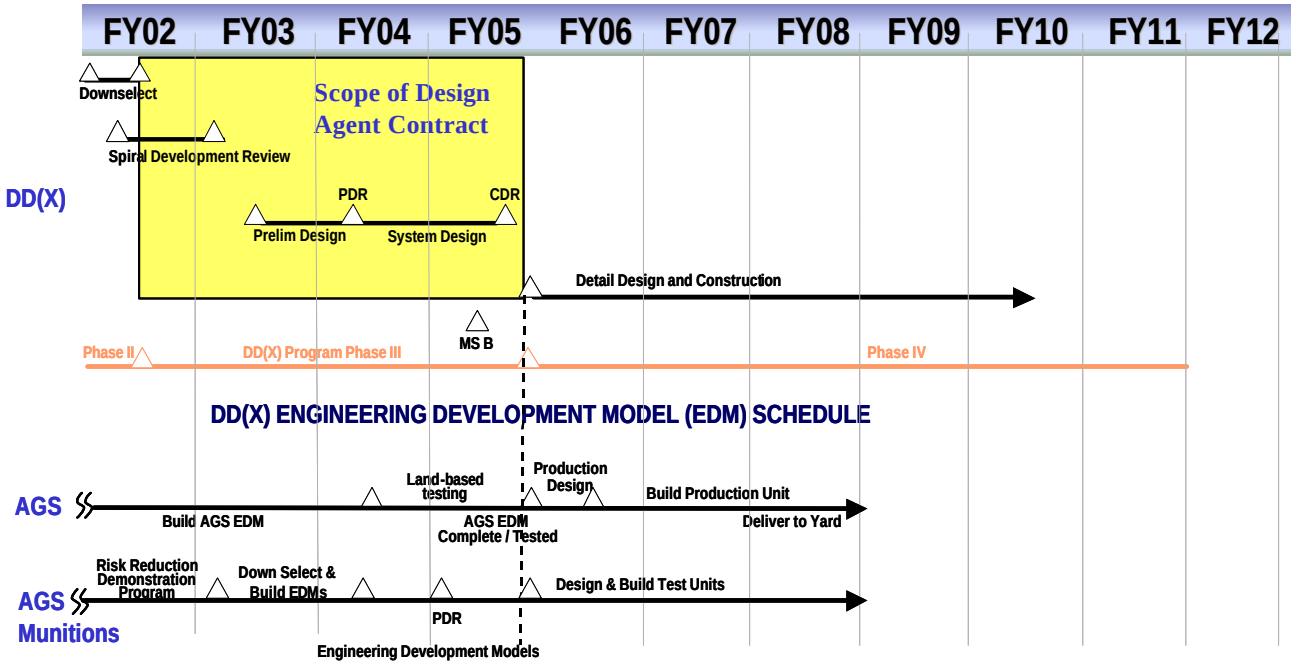
Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32467/AGS-Advanced Gun System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	177.435	0.000	N/A					0.000	177.435	
	CPAF	DD(X) Design Agent	62.342	97.115	1QFY03					CONT	CONT	
Ancillary Hardware Development												
Product Development												
Ship Integration												
Ship Suitability												
Systems Engineering												
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			239.777	97.115		0.000		0.000		CONT	CONT	
Remarks: FY04 and out fund for this effort was reprogrammed to PE 0604300N, AGS Project 34009.												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32467/AGS-Advanced Gun System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support	GSA/FFP	Anteon Arlington, VA	2.776	1.000	10/02					CONT	CONT	
	Various	Other Contractors	1.444	0.500	Various					CONT	CONT	
Government Engineering Support	WR	NSWC DD Dahlgren, VA	11.478	3.000	10/02					CONT	CONT	
	WR	NSWC PHD Pt. Hueneme, CA	5.342	1.514	10/02					CONT	CONT	
	WR	Other Gov't Activities	8.629	2.662	Various					CONT	CONT	
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			29.669	8.676		0.000		0.000		CONT	CONT	
Remarks: For FY 2004 and out, this effort was reprogrammed to PE 0604300N, Project 34009. See those exhibits for FY04 and FY05 data.												
Total Cost			269.446	105.791		0.000		0.000		CONT	CONT	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 32467/AGS-Advanced Gun System



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32467/AGS-Advanced Gun System			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
DD(X) Design/Development Contract Award	3Q							
System Design and Development	1Q-4Q	1Q-4Q	1Q-4Q					
Preliminary Design Review			2Q-3Q					
Milestone B				3Q				
Lead Ship Award				3Q				
Critical Design Review				4Q				
Detail Design and Construction				4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Developmental Testing (DT-IIB1)				4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Developmental Testing (DT-IIB2)								3Q-4Q

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard Sys Component Development				PROJECT NUMBER AND NAME 32468/Undersea Warfare			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**24.505**	**20.093**	**1.435**	**1.684**	**4.207**	**2.002**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

The Undersea Warfare (USW) project provides advanced development demonstration and validation of technology through a build-test-build process for potential surface sonar and combat system application. Efforts focus on resolution of technical issues associated with providing capability against the year 2010 and beyond threat with emphasis on shallow water/littoral area USW and on Demonstration and Validation (DEM/VAL) of DD(X) Integrated Undersea Warfare (IUSW-21) Advanced Development Model (ADM). The key technology areas being investigated include: (1) improvements in signal processing, (2) advanced information processing, (3) multi-sensor data fusion, (4) towed array technology, (5) hull array technology and (6) transducer technology to improve target detection and classification performance and reduce system manning requirements for anti-submarine, torpedo defence and in-stride mine avoidance. FY 2002 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32468/Undersea Warfare

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.877	5.860	0.374	0.472
RDT&E Articles Quantity	0	0	0	0

(U) IUSW-21 Risk reduction contracts/tasks - Completed integration of FY99 Broad Agency Announcements (BAAs) into the ADM. Awarded DD(X) Design Agent (DA) contract to support the build-test-build process and the FY04 sea test. DA will continue risk reduction tasks 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. In FY 03, begin integration of risk reduction tasks to support the build -test-build process and the FY 04 sea test; continue risk reduction tasks to further define advanced information. For FY 04, continue risk reduction tasks to further define advanced information processing and complete integration of risk reduction into the ADM to support the build-test-build process and the FY 04 sea test. In FY 05, complete integration of risk reduction tasks into the ADM to support the build-test-build process and the FY 07 sea test.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	15.026	10.634	0.736	0.840
RDT&E Articles Quantity	0	0	0	0

(U) IUSW-21 ADM Development - Performed Integrated Peer Group (IPG) engineering reviews of IUSW-21 advanced technologies. Finished the development and integration of IUSW-21 advanced technologies into ADM demonstration system for FY02 sea test. For FY 03, continue the development and integration of IUSW-21 advanced technologies for the FY04 sea test. Perform Integrated Product Team (IPT) engineering reviews of IUSW advanced technologies. In FY 04, continue IPT (IPT) engineering reviews of IUSW-21 advanced technologies. Complete the development and integration of IUSW-21 advanced technologies into ADM demonstration system for FY05 sea test. In FY 05, complete the development and integration of IUSW-21 advanced technologies into ADM demonstration system for FY07 sea test. Continue to perform IPT engineering reviews of IUSW-21 advanced technologies.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.602	3.599	0.325	0.372
RDT&E Articles Quantity	0	0	0	0

(U) FY02 Sea Test - Completed equipment preparation and integrated Multi-Function Towed Array (MFTA) into ADM. Shipped and installed equipment, conducted sea test and collected data. In FY 03, remove and transport equipment, refurbish ship, perform data analysis, and begin planning for FY04 sea tests. In FY 04, complete equipment preparation for FY 04 sea test. Ship equipment, conduct FY 04 sea test, collect data and begin data analysis. In FY 05, complete equipment preparation for FY 05 sea test. Ship and install equipment, conduct FY 05 sea test and collect data.

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32468/Undersea Warfare

C. (U)PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	25.315	20.546	16.812	13.764
Current BES/President's Budget: (FY04 Pres Controls)	24.505	20.093	1.435	1.684
Total Adjustments	-0.810	-0.453	-15.377	-12.080
(U)Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.181	-0.120		
Congressional rescissions				
POM-04 realignment from DD(X) BA-4 budget to BA-5			-15.300	-12.000
SBIR/STTR Transfer	-0.860			
Economic Assumptions	-0.067	-0.115		
Reprogrammings				
Miscellaneous Minor Adjustments	0.298	-0.218	-0.077	-0.080
Subtotal	-0.810	-0.453	-15.377	-12.080

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32468/Undersea Warfare

D. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineerir	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. (U) ACQUISITION STRATEGY:

(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 were competitively awarded to further refine advanced information processing for automated detect classify and localize, data fusion, automated environmental adaptation, mine avoidance, torpedo defense, and displays for reduced manning to provide further risk mitigation for DD(X) USW activities. In Contract Phase III responsibility for IUSW-21 ADM development for the FY04 and FY05 sea tests will be with the DD(X) Design Agent.

F. (U)MAJOR PERFORMERS:

DD(X) Design Agent - Ingalls Shipbuilding Inc (ISI).
Government Field Activities - Naval Undersea Warfare Center Newport

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

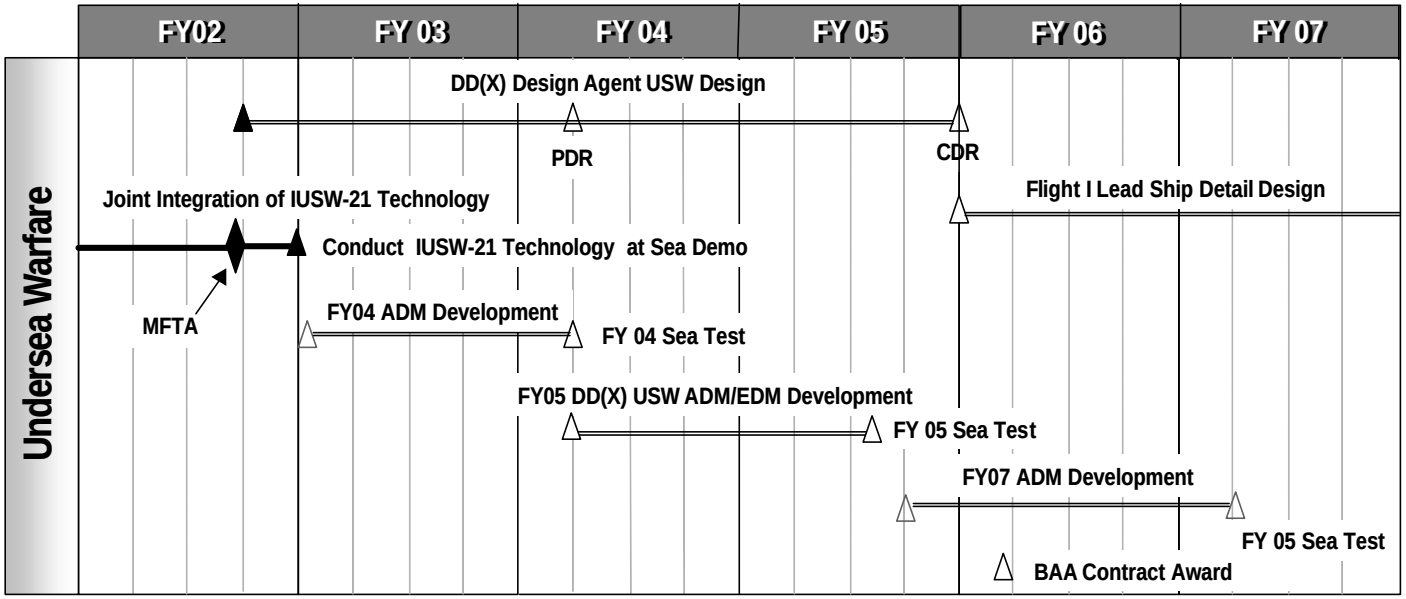
Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32468/Undersea Warfare						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	11.104	0.000	N/A	0.000	N/A	0.000	N/A	0.000	11.104	
	CPAF	DD(X) Design Agent	4.000	4.260	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	BAA/CPF	Competition	14.176	0.600	Various	0.374	Various	0.472	Various	CONT	CONT	
Ancillary Hardware Development												
Systems Engineering	C/CPFF	LMC, Syracuse, NY	0.813	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	WR	Other Gov't Activities	0.000	1.000	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	C/CPFF	RSC, Newport, RI	0.827	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			30.920	5.860		0.374		0.472		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development	C/CPFF	LMC, Syracuse, NY	11.589	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	C/CPFF	RSC, Newport, RI	10.316	0.000	N/A	0.000	N/A	0.000	NA	CONT	CONT	
	WR	Other Gov't Activities	0.000	1.000	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	CPAF	DD(X) Design Agent	0.000	6.000	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			21.905	7.000		0.000		0.000		CONT	CONT	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32468/Undersea Warfare						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC/N Newport, RI	5.238	2.599	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	SS/CPFF	APL/JHU Laurel, MD	1.430	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	CPAF	DD(X) Design Agent	0.000	1.000	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	PD/WR	Other Gov't Activities	0.000	0.000	N/A	0.325	Various	0.372	Various	CONT	CONT	
Operational Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			6.668	3.599		0.325		0.372		CONT	CONT	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support	WR	Other Gov't Activities	1.631	0.725	Various	0.237	1QFY04	0.293	1QFY05	CONT	CONT	
	SS/CPFF	NUWC/N Newport, RI	4.415	1.624	12/02	0.374	1QFY04	0.436	1QFY05	CONT	CONT	
	SS/CPFF	Various	2.055	0.300	12/02	0.000	N/A	0.000	N/A	CONT	CONT	
Program Management Support	GSA/FFP	Anteon Arlington, VA	2.090	0.225	12/02	0.125	1QFY04	0.111	1QFY05	CONT	CONT	
	PD/WR	Other Gov't Activities	0.091	0.760	Various	0.000	N/A	0.000	N/A	CONT	CONT	
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			10.282	3.634		0.736		0.840		CONT	CONT	
Remarks:												
Total Cost			69.775	20.093		1.435		1.684		CONT	CONT	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32468/Undersea Warfare



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32468/Undersea Warfare			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
FY02 ADM Sea Test	4Q	1Q						
FY04 ADM Development		1Q-4Q	1Q					
FY04 ADM Sea Test			2Q					
DD(X) Preliminary Design Review (PDR)			2Q-3Q					
FY05 DD(X) USW ADM/EDM Development			2Q-4Q	1Q-2Q				
FY05 DD(X) USW ADM/EDM Sea Test				3Q				
DD(X) Critical Design Review (CDR)				4Q				
FY07 ADM Development				4Q	1Q-4Q			
BAA Contract Award					1Q			
FY07 ADM Sea Test						1Q		
FY07 ADM Sea Test Data Analysis						2Q-4Q		

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: 4	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard Sys Component				PROJECT NUMBER AND NAME 32469/Open Systems Architecture (OSA)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**5.391**	**4.499**	**3.765**	**3.504**	**2.571**	**2.070**	**2.103**	**2.137**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The following provides a mission description for each major development area (i.e., Fleet-Focused Initiative (FFI) and Open Systems Architecture (OSA):

(U) Fleet-Focused Initiative: 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.

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32469/Open Systems Architecture (OSA)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.953	1.126	0.960	0.956
RDT&E Articles Quantity	0	0	0	0

(U) Open Systems Architecture - Common Family of Ships (FOS) Business/Technical Architecture and Technology Management: FY02: Spiral Design Reviewed (SDR) and drafted business architecture for common FOS Architectures, Interfaces and Modular Systems (AIMS) implementation and DD(X) Family of Ships (FOS) with Technology Management (TM)--projections of technology, operational and technical architectures, regulatory, market and cost drivers, benchmarking and market research--initial plans and database. FY03: Common AIMS / Modularity assessments for FOS / SDR with processes and metrics to assess/validate system architecture and interface adaptability for technology refresh and insertion. FY04: Draft architecture for common FOS AIMS. FY05: Integrate common PEO Ships FOS AIMS. Yearly: update TM plans.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.302	1.806	2.613	2.548
RDT&E Articles Quantity	0	0	0	0

(U) Open Systems Architecture - Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones A-E below.

A. Open Command and Control (C&C) Zone, FY02-3: Concept development, FY04-05: Architecture development, FY05: Interface development.
The following two efforts are subsets of the C&C Zone:
1. Open C4ISR Zone, FY02: Open Foundation interface, FY02-03: Foundation Interface promulgation and HVAC Interface development, FY02-3: HVAC Interface refinement and promulgation
2. Open C&C Zone Sensor/Network and Supply, Maintenance and Monitoring Open Architecture (SMMOA) Interfaces, FY02: Developed preliminary concepts, FY02-3: risk reduction with demonstrators and industry and Navy outreach, FY03-4: Interface concepts, FY04-5: Interfaces.
B. Open Offboard Vehicle Zone, FY02: Developed preliminary Concepts, FY02-3: Concepts, FY03-4: Architecture, FY05: Interfaces.
C. Open Weapons/Power Projection Zone: FY03: Concept, FY04: Architecture, FY05: Interfaces
D. Open Sensors Zone, FY05: Concepts
E. Open Machinery Zones, continuing: Support the implementation of common interfaces for environmental systems.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.670	0.877	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Fleet-Focused Initiatives - Fuel Cell - Continued Ship Surface Fuel Cell (SSFC) ship impact assessments and model analysis of molten carbonate reduced scale demonstrator and PEM integrated fuel processor. For FY 03, validate static and dynamic models of molten carbonate SSFC.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32469/Open System Architecture (OSA)

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.267	0.345	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Fleet-Focused Initiatives - Salvage and Underwater Ship Husbandry - Performed prototype assembly and testing for the Smart Tow Monitoring System. Continued development of materials for the improved Shaft Coating Systems. Acquired diagnostic hardware for evaluating Shaft Coating System performance. For FY 03, complete preliminary testing of the Smart Tow System. Evaluate inspection/diagnostic techniques and document protocol for inspecting Shaft Coating Systems underwater.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.199	0.345	0.192	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Fleet-Focused Initiatives - TOC Initiatives - Continued development of improved fuel system training that reduced sailor workload for the existing fleet. For FY 04, complete efforts to improve fuel system training that reduces workload for the existing fleet and issue final report.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32469/Open Systems Architecture (OSA)

C. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	5.556	4.600	3.945	3.656
Current BES/President's Budget: (FY04 Pres Controls)	5.391	4.499	3.765	3.504
Total Adjustments	-0.165	-0.101	-0.180	-0.152
(U)Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.025	-0.026		
Congressional rescissions				
SBIR/STTR Transfer	-0.126			
Economic Assumptions	-0.015	-0.026		
Reprogrammings				
Miscellaneous Minor Adjustments	0.001	-0.049	-0.180	-0.152
Subtotal	-0.165	-0.101	-0.180	-0.152

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32469/Open Systems Architecture (OSA)

D. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineerir	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. ACQUISITION STRATEGY:

F. (U)MAJOR PERFORMERS:

Government Field Activities- NSWC Carderock and NSWC Dahlgren

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32469/Open Systems Architecture (OSA)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Survivability												
Primary Hardware Development	845/804	DD(X) Industry Teams	22.777	0.000	N/A	0.000	N/A	0.000	N/A	0.000	22.777	
	WR	NSWC CD Bethesda, MD	10.023	0.000	N/A	0.000	N/A	0.000	N/A	0.000	10.023	
	Various	Other Gov't Activities	4.987	0.000	N/A	0.000	N/A	0.000	N/A	0.000	4.987	
	Various	Other Contractors	2.735	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.735	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			40.522	0.000		0.000		0.000		0.000	40.522	
Remarks:												
Architecture, Interfaces & Modular Systems (AIMS)												
Engineering Dev, Demo & Eval	845/804	DD(X) Industry Teams	12.550	0.000	N/A	0.000	N/A	0.000	N/A	0.000	12.550	
	Various	Other Gov't Activities	14.733	1.818	Various	2.200	Various	1.900	Various	CONT	CONT	
	Various	Other Contractors	5.870	1.114	Various	1.373	Various	1.604	Various	CONT	CONT	
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			33.153	2.932		3.573		3.504		CONT	CONT	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32469/Open Systems Architecture (OSA)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Fleet Focused Initiatives												
Contractor Engineering Support	Various	Other Contractors	1.340	0.345	Various	0.000	N/A	0.000	N/A	0.000	1.685	
Government Engineering Support	WR	NSWC CD Philadelphia, PA	2.556	1.222	Various	0.192	10/03	0.000	N/A	0.000	3.970	
	Various	Other Gov't Activities	13.995	0.000	N/A	0.000	N/A	0.000	N/A	0.000	14.104	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			17.891	1.567		0.192		0.000		0.000	19.650	
Remarks:												
Total Cost			91.566	4.499		3.765		3.504		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

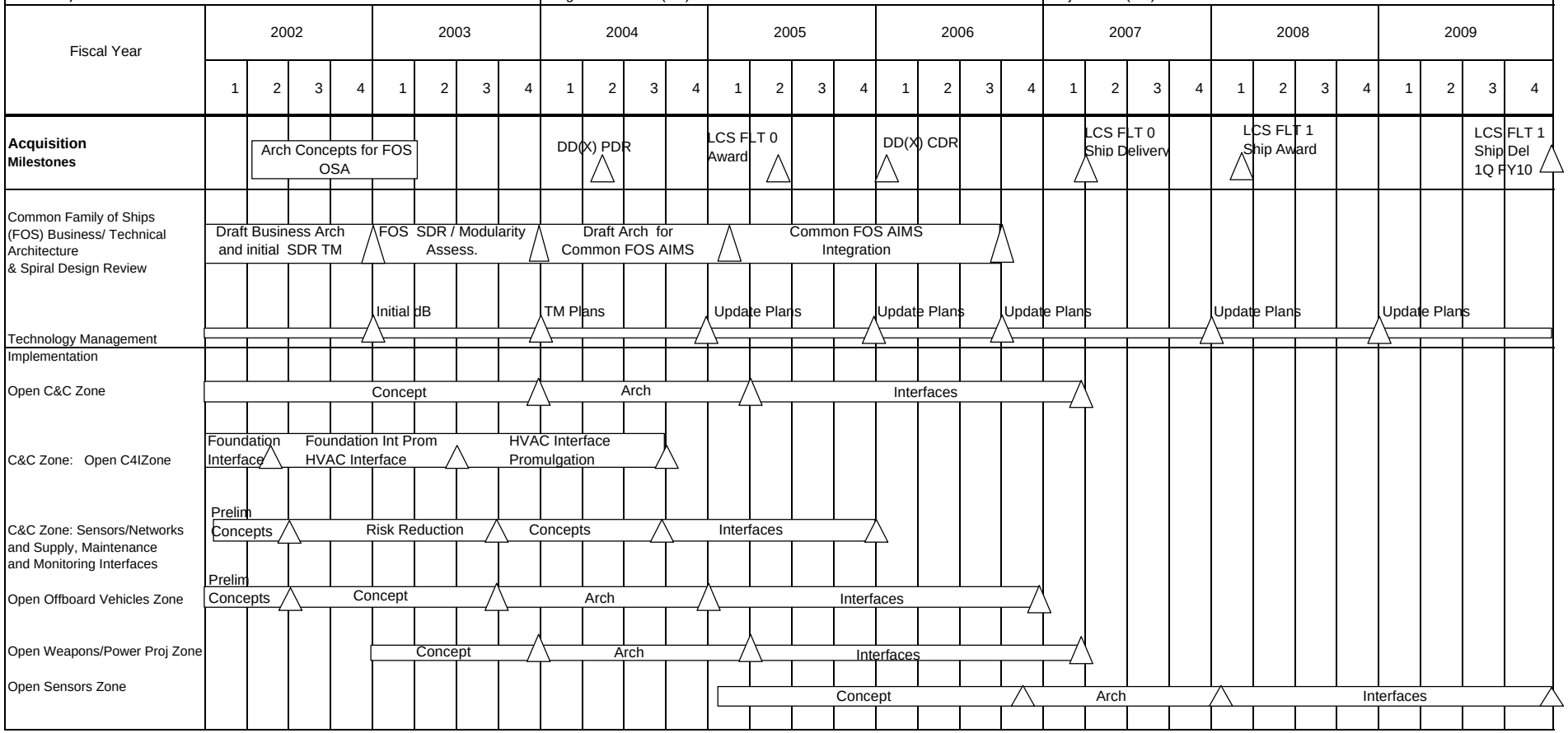
CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: Program Element (PE) No. and Name

PROJECT NUMBER AND NAME: Project Unit (PU) No. and Name



R-1 SHOPPING LIST - Item No. 44

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE 0603513N Shipboard Sys Component Development				PROJECT NUMBER AND NAME 32469/ Open Systems Architecture (OSA)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Business/Technical Architecture								
Draft Business Arch and initial SDR TM Complete	4Q							
FOS SDR / Modularity Assessment complete			1Q					
Draft Architecture for Common FOS AIMS Complete				1Q				
Common FOS AIMS Modularity Integration Complete					3Q			
Technology Management								
Initial Database Complete	4Q							
TM Plans Issues		4Q						
Update TM plans			4Q/yearly					
Implementation								
Open Command and Control Zone								
Open C&C Zone Concept Complete		4Q						
Open C&C Zone Architecture Complete				1Q				
Open C&C Zone Interfaces Defined						1Q		
Open C4I Zone Foundation Interface Development	2Q							
Open C4I Zone Foundation Promulgation		2Q						
Open C4I Zone HVAC Interface Defined		4Q						
Open C4I Zone HVAC Implementation Complete			3Q					
Sensor/Networks and SMMOA Risk Reduction		3Q						
Sensor/Networks and SMMOA Interface Concepts Complete			3Q					
Sensor/Networks and SMMOA Interfaces Defined				4Q				
Open Offboard Vehicles Zone								
Open Offboard Vehicles Zone Concept Complete		3Q						
Open Offboard Vehicles Zone Architecture Complete				1Q				
Open Offboard Vehicles Zone Interfaces Defined					4Q			
Open Weapons/Power Projection Zone								
Open Weapons Zone Concept Complete		4Q						
Open Weapons Zone Arch Complete				2Q				
Open Weapons Zone Interfaces Defined						1Q		
Open Sensors Zone								
Open Sensors Zone Concept Complete					4Q			
Open Sensors Zone Architecture Complete							1Q	
Open Sensors Zone Interfaces Defined								4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard Sys Component				PROJECT NUMBER AND NAME 32470/Integrated Topside Design (ITD)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**5.239**	**4.129**	**3.711**	**3.638**	**2.823**	**0.873**	**0.874**	**0.884**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32470/Integrated Topside Design (ITD)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.045	1.387	1.560	1.534
RDT&E Articles Quantity	0	0	0	0

Completed Aperture Signature Prediction Tool Assessment Study. Began development of Advanced EMI Design and Analysis Modeling Tool (Ver. 1.0). Completed collection and analysis of infrared (IR) signature data from SIMVEX 02 in Halifax, Nova Scotia. Completed collection of range data to Validation &Verification (V&V) radar cross section (RCS) signature prediction tool for low observable ships. Initiated collection of at-sea data to V&V IR signature prediction tool for low observable ships.Continue the deveopment, enhancement, validation and verification of topside signature control and electronic warfare effectiveness for Materials & Signature (M&S) tools.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.532	1.395	1.551	1.530
RDT&E Articles Quantity	0	0	0	0

Completed V&V of Advanced Antenna Electronics, Advanced Array Antenna (Ver. 1.0), and Advanced Frequency Selective Surface (Ver. 1.0) Design and Analysis Modeling Tools. Completed Composite Materials Fire Safety Goals and Qualification Procedures and Composite Materials Outfitting Performance Design Guides. Completed development and V&V of Composite Materials Joint Analysis M&S Tool (SPLICE Ver. 2). Completed reports on Composite Material External Doubler Joint and Composite Material Adhesive Shear Testing. Completed development of Analytical Design Tool to Establish Performance Standards for Critical Flaw Evaluation in Marine Composites. Continue development, enhancement, validation and verification of topside Eelectro Magnetic Engineering (EME) Materials & Signature tools.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.662	0.887	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Continued development of auxiliary machinery, alternative hydrogen fuel, fuel storage, and architectures to support fleet and Strategic Studies Groups 19 and 20 initiatives. Continue development of affordable, efficient HM&E machinery and architectures for existing and future fleets.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32470/Integrated Topside Design (ITD)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.460	0.600	0.574
RDT&E Articles Quantity	0	0	0	0

Continue development of acceptance guides for marine composites for surface ships.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity	0	0	0	0

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity	0	0	0	0

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32470/Integrated Topside Design (ITD)

C.(U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	5.348	4.224	3.886	3.795
Current BES/President's Budget: (FY04 Pres Controls)	5.239	4.129	3.711	3.638
Total Adjustments	-0.109	-0.095	-0.175	-0.157
(U)Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.039	-0.026		
Congressional rescissions				
SBIR/STTR Transfer	-0.050			
Economic Assumptions	-0.015	-0.024		
Reprogrammings				
Miscellaneous Minor Adjustments	-0.005	-0.045	-0.175	-0.157
Subtotal	-0.109	-0.095	-0.175	-0.157

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / B4	0603513N/Shipboard System Component Development	32470/Integrated Topside Design (ITD)

D. (U)OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineerin	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. ACQUISITION STRATEGY:

F. (U) MAJOR PERFORMERS:

Government Field Activities-NRL Washington DC, NSWC Carderock, SPAWAR Systems Center San Diego.

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32470/Integrated Topside Design (ITD)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DD(X) Industry Teams	24.556	0.000	N/A	0.000	N/A	0.000	N/A	0.000	24.556	
Ancillary Hardware Development											0.000	
Systems Engineering										0.000	0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			24.556	0.000		0.000		0.000			24.556	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000			0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 32470/Integrated Topside Design (ITD)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support	Various	Other Contractors	3.408	0.060	Various	0.048	Various	0.041	Various	CONT	CONT	
Government Engineering Support	WR	NSWC CD Bethesda, MD	1.414	0.000	0.000	0.000	N/A	0.000	N/A	CONT	CONT	
	WR	SSCSD, San Diego, CA	1.566	0.000	0.000	0.000	N/A	0.000	N/A	CONT	CONT	
	Various	Other Gov't Activities	20.823	4.069	Various	3.663	Various	3.597	Various	CONT	CONT	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			27.211	4.129		3.711		3.638		CONT	CONT	
Remarks:												
Total Cost			51.767	4.129		3.711		3.638		CONT	CONT	
Remarks:												

CLASSIFICATION:

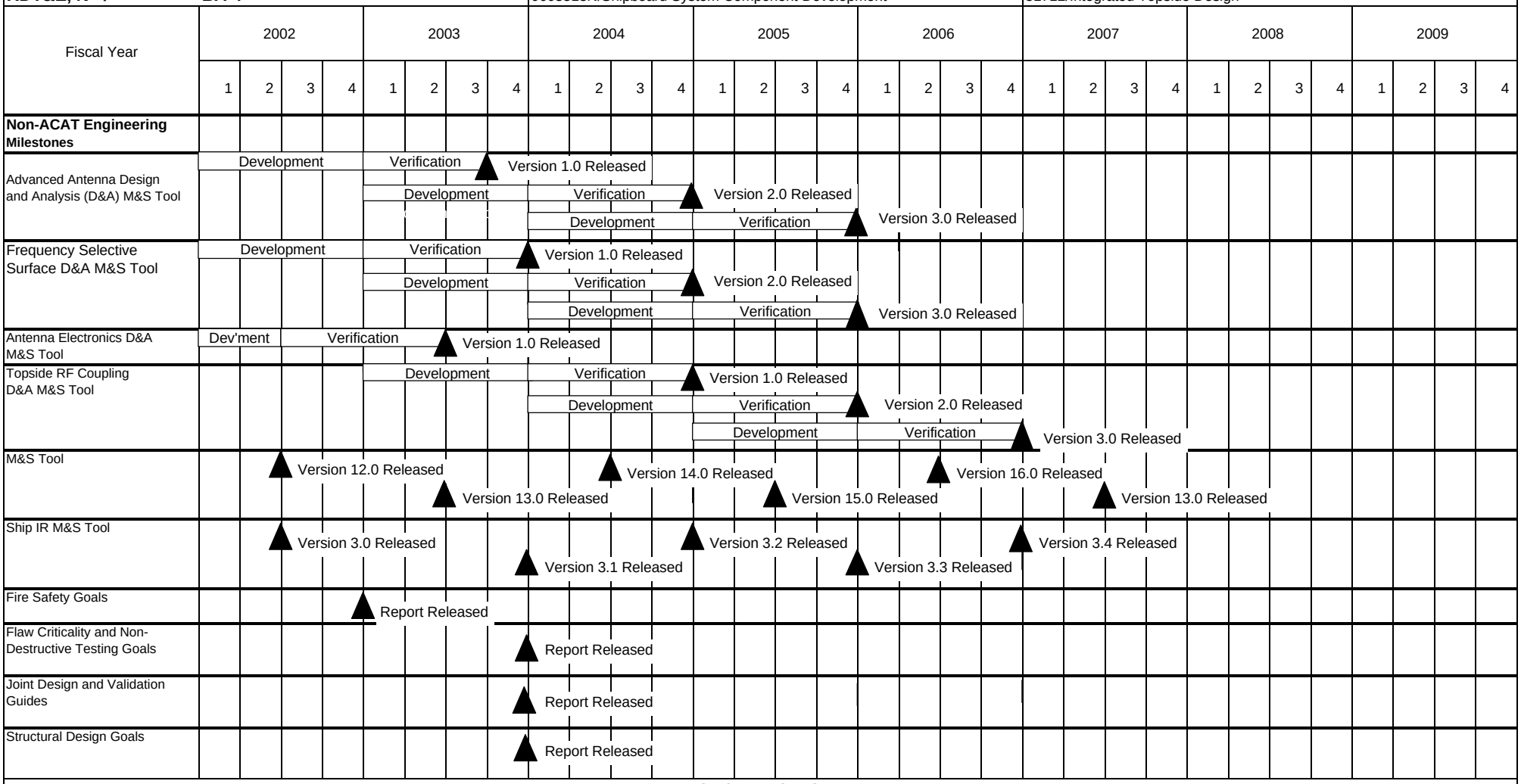
EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603513N/Shipboard System Component Development

PROJECT NUMBER AND NAME: 51712/Integrated Topside Design



R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&E BA-4	0603513N/Shipboard System Component Dev				51712/Integrated Topside Design			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Electromagnetic Engineering								
Advanced Antenna Design and Analysis (D&A) M&S Tool								
Version 1.0 Released		3Q						
Version 2.0 Released			3Q					
Version 3.0 Released				3Q				
Frequency Selective Surface D&A M&S Tool								
Version 1.0 Released		4Q						
Version 2.0 Released			4Q					
Version 3.0 Released				4Q				
Antenna Electronics D&A M&S Tool								
Version 1.0 Released		2Q						
Topside RF Coupling D&A M&S Tool								
Version 1.0 Released			3Q					
Version 2.0 Released				4Q				
Version 3.0 Released					4Q			
Electronic Warfare Effectiveness and Topside Signatures								
Radar Target Signature M&S Tool								
Version 12.0 Released	2Q							
Version 13.0 Released		2Q						
Version 14.0 Released			2Q					
Version 15.0 Released				2Q				
Version 16.0 Released					2Q			
Version 17.0 Released						2Q		
ShipIR M&S Tool								
Version 3.0 Released	3Q							
Version 3.1 Released		4Q						
Version 3.2 Released			4Q					
Version 3.3 Released				4Q				
Version 3.4 Released					4Q			
Composite Materials								
Fire Safety Goals	Q4							
Flaw Criticality and Non Destructive Testing Goals		Q4						
Joint Design and Validation Guide		Q4						
Structural Design Goals			Q2					
R-1 SHOPPING LIST - Item No. 44								

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard Sys Component				PROJECT NUMBER AND NAME 32471/Integrated Power Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**100.910**	**97.559**	**5.005**	**4.157**	**9.796**	**9.607**	**9.699**	**9.866**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: (U) FY 2004 and FY 2005 IPS DD(X) funds transferred to BA-5 PE 0604300N IPS Project 34010.

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. IPS reduces acquisition and operating costs of naval ships and increases military effectiveness. IPS leverages investments in technologies that will be useable by both military and commercial sectors.

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

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

- (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.

- (U) Platform Specific Development: includes all efforts to design, develop and test integrated power system equipment for ship specific application including DD(X) family of ships. This includes Permanent Magnet (PM) motor and motor drive technologies

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32471/Integrated Power Systems

- (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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32471/Integrated Power Systems

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	23.145	2.612	1.500	1.000
RDT&E Articles Quantity	0	0	0	0

Systems Development: 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. Demonstrate automated system reconfiguration and start-up. Mitigate potential risks associated with a fielded IPS Integrated Fight Through Power (IFTP) system by fabricating hardware required to populate IPS baseline configuration and conducting testing. Modify 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. Develop IPS configurations in support of all future surface ship programs. 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 LHR (X) and MPF future. Develop 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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	72.500	82.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Platform Specific Development: NOTE: FY 04 and FY 05 funds for IPS on DD(X) have been transferred to PE 0604300N/Project 34010. Award contract for DD(X) IPS land-based and at-sea Engineering Development Models (EDMs). In support of DD(X) IPS EDM land-based and at-sea testing: determine representative test hardware configurations; and develop test site designs; order Long Lead Material (LLM) and other material for large generators and prime movers. Perform DD(X) spiral development review studies. Conduct detailed design of DD(X) IPS system including design and fabrication of IPS EDMs. Perform studies of ship electric architectures and high power weapons system requirements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603513N/Shipboard System Component Development	32471/Integrated Power Systems

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	5.265	12.947	3.505	3.157
RDT&E Articles Quantity	0	0	0	0

R/V Triton At Sea Testing: Design, build, test IFTP hardware in an IPS configuration onboard the RV Triton. Perform detailed development and design of the RV Triton IPS configuration for at sea testing. Develop IPS control system modifications for use during at-sea testing. Conduct risk reduction efforts and ship modifications. Conduct modeling and simulation studies of system stability and interfaces. Conduct at sea testing onboard the RV Triton.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32471/Integrated Power Systems

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	105.577	99.765	79.889	65.902
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	100.910	97.559	5.005	4.157
Total Adjustments	-4.667	-2.206	-74.884	-61.745
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.754	-0.589		
Congressional rescissions				
SBIR/STTR Transfer	-4.177			
Economic Assumptions	-0.279	-0.559		
POM-04 realignment from DD(X) BA-4 budget to BA-5			-74.700	-61.600
Navy Undistributed Adjustments				
Miscellaneous Minor Adjustments	0.543	-1.058	-0.184	-0.145
Subtotal	-4.667	-2.206	-74.884	-61.745

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	32471/Integrated Power Systems

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0604300N/ DD(X) Total Ship Sys Engineerin	235.952	688.170	1037.987	1438.998	1708.398	1320.320	901.070	595.107	CONT.	CONT.
PE 211900 / SCN	0.000	0.000	0.000	0.000	1,842.142	1,409.086	2,297.603	3,549.907		

E. (U)ACQUISITION STRATEGY:

(U) IPS is a candidate system for DD(X) and all other future surface ships.

F. (U)MAJOR PERFORMERS:

(U) IPS DD(X) Design agent, Ingalls Shipbuilding Iinc. General Atomics and DRS Power and Controls Technologies Inc., IPS IFTP contractors.

R-1 SHOPPING LIST - Item No. 44

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32471/Integrated Power Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed M Syracuse, NY	23.572	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	Sec845/8(	DD (X) Industry Teams	66.661	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	CPAF	DD (X) Design Agent	72.500	82.000	1QFY03	0.000	N/A	0.000	N/A	CONT	CONT	
	Sec845/8(	IFTP Teams	39.885	12.859	10/02	3.505	10/03	3.157	10/04	CONT	CONT	
	US/UK M(	DERA, UK	1.350	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	WR	NSWCCD Philadelphia, PA	23.005	1.150	10/02	0.550	10/03	0.300	10/04	CONT	CONT	
	WR	NSWCCD Dahlgren, Va.	2.806	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	Various	Other Contractors	9.500	0.450	12/02	0.400	12/03	0.175	12/04	CONT	CONT	
	Various	Other Govt Activities	1.895	0.000	10/02	0.000	10/03	0.000	10/04	CONT	CONT	
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			241.174	96.459		4.455		3.632		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000			0.000	
Remarks:												

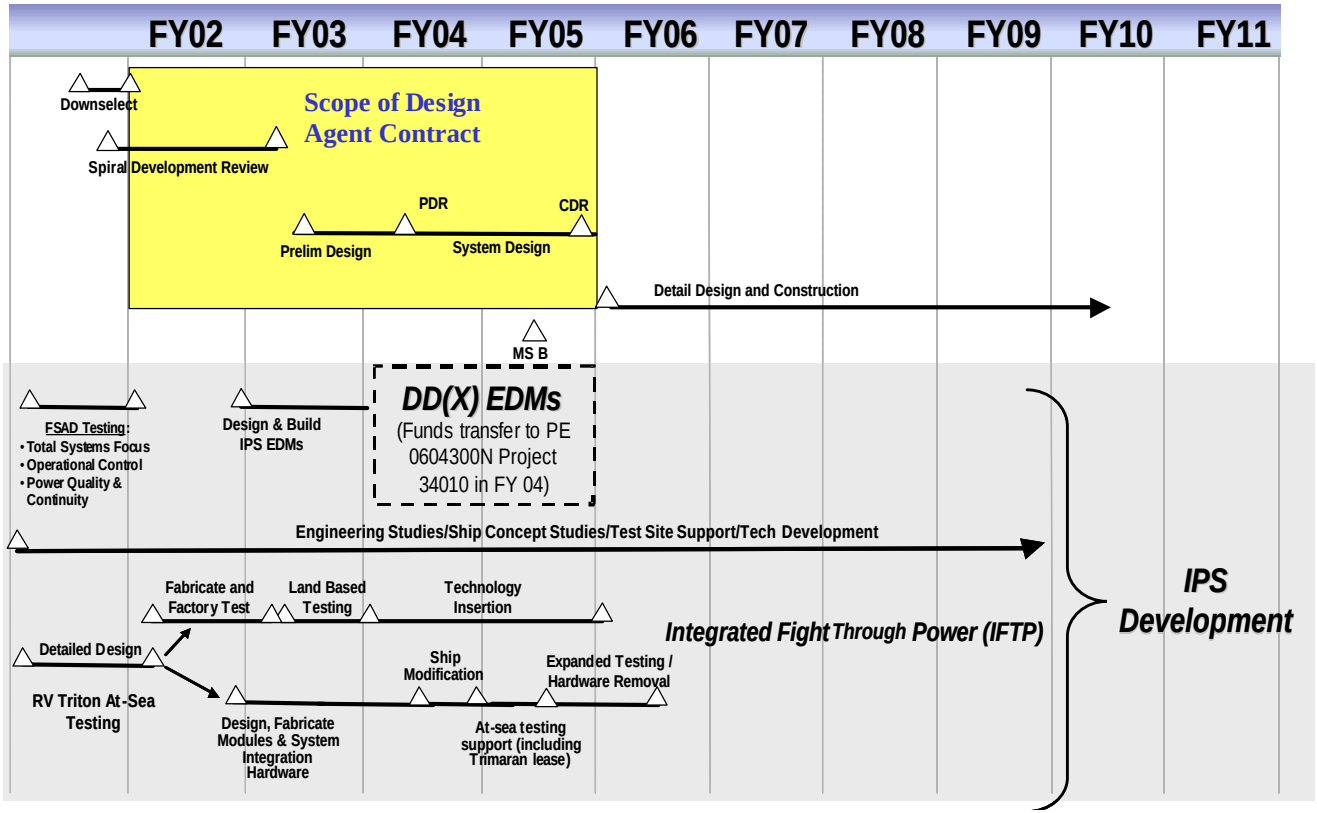
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32471/Integrated Power Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC CD Philadelphia, PA	16.576	1.000	10/02	0.500	10/03	0.500	10/04	CONT	CON	
Operational Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			16.576	1.000		0.500		0.500		CONT	CONT	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel	Various	Various	0.524	0.100	10/02	0.050	10/03	0.025	10/04	CONT	CONT	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.524	0.100		0.050		0.025		CONT	CONT	
Remarks:												
Total Cost			258.274	97.559		5.005		4.157		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 32471/Integrated Power Systems



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 32471/Integrated Power Systems			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
IPS DD(X) EDMs								
Design & Build	4Q	1Q-4Q						
IPS IFTP Land Based								
Fabrication & Factory Testing	2Q-4Q	1Q						
Land Based Testing		2Q-4Q	1Q					
Technology Insertion			1Q-4Q	1Q-4Q	1Q			
IPS IFTP At Sea RV Triton								
Detailed Design	2Q							
Design, Fabrication & Integration	4Q	1Q-4Q	1Q-2Q					
Ship Modifications			3Q-4Q					
At sea testing			4Q	1Q-3Q				
Extended testing and hardware removal				3Q-4Q	1Q-3Q			
IPS Technology Insertions								
Engineering Studies					1Q-4Q	1Q	1Q-4Q	1Q-4Q
Ship Concept Studies					3Q-4Q	1Q-3Q		1Q-4Q
Test Site Support						4Q	1Q-3Q	
Technology Development							2Q-4Q	1Q-4Q

R-1 SHOPPING LIST - Item No. 44

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603542N/Radiological Controls			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost								
Project Unit S1830/RADIAC Development	**1.009**	**1.055**	**1.112**	**0.959**	**0.970**	**0.982**	**0.999**	**1.016**
RDT&E Articles Qty	**505**	**555**	**5**	**5**				

Defense Emergency Response Funds (DERF) Funds:

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

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

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

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

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603542N/Radiological Controls	S1830/RADIAC Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.545	0.634	0.830	0.738
RDT&E Articles Quantity	5	5	5	5

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

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.200	0.224	0.282	0.221
RDT&E Articles Quantity	0	50	0	0

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

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.264	0.197		
RDT&E Articles Quantity	500	500		

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603542N/Radiological Controls	S1830/RADIAC Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY2003 President's Budget:	1.056	1.078	1.158	0.999
FY2004 President's Budget:	1.009	1.055	1.112	0.959
Total Adjustments	-0.047	-0.023	-0.046	-0.040
Summary of Adjustments				
Management Reform Initiative	-0.009			
FY 2002 SBIR	-0.007			
Section 313, PL 107-206: Revised	-0.002			
NWCF Rates - SPAWAR			-0.001	0.001
FY 02 BTR (July 02)	-0.021			
Business Process Reform		-0.004		
Economic Assumptions	-0.003	-0.006		
IT Cost Growth		-0.002		
Miscellaneous adjustments			-0.019	-0.021
NWCF Rates - R&D Fuel				0.001
Inflation adjustment		-0.011	-0.026	-0.021
Subtotal	-0.042	-0.023	-0.046	-0.040

Schedule:

Additional development is required on the Casualty Dosimetry System and the Multi-Function RADIACb(MFR) Frisker Probe based on the initial prototype evaluation. Resultant change shifts development efforts on other MFR probes out to FY 03 start.

Technical:

The scope of development of the Naval Dosimetry System has been expanded to include evaluation of a secondary personnel dosimetry system for shipboard use.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603542N/Radiological Controls	PROJECT NUMBER AND NAME S1830/RADIAC Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 292000 RADIAC	7.707	7.847	8.600	8.287	8.593	8.767	8.928	9.089	CONT.	CONT.

E. ACQUISITION STRATEGY: *

Development efforts are being focused on evaluation, modification (as required to meet operational requirements) and adaptation of commercial-off-the-shelf (COTS) technology in order to minimize total ownership costs. To the maximum extent possible new contracts are targeted for fixed price efforts to control development cost.

F. MAJOR PERFORMERS: **

SPAWARSYSCEN Charleston. Technical Direction Agent and In-Service Engineering Assistance.
NSWC Carderock. Science & Technology Agent.
Science Applications International Corporation (SAIC). Multi-Function RADIAC Probe development. Award estimated May 2003.
JP Laboratories, Inc. Development of Casualty Dosimetry System. Award estimated April 2003.

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603542N/Radiological Controls				PROJECT NUMBER AND NAME S1830/RADIAC Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/FP	Various	9.000	0.506	05/03	0.553	03/04	0.390	03/05		10.449	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WX	SPAWARSYSCEN Chasn.	1.100								1.100	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			10.100	0.506		0.553		0.390		0.000	11.549	
Remarks:												
Development Support	WX	NSWC Carderock	1.120	0.280	04/03	0.285	10/03	0.290	10/04		1.975	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			1.120	0.280		0.285		0.290		0.000	1.975	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603542N/Radiological Controls				PROJECT NUMBER AND NAME S1830/RADIAC Development					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	SPAWARSYSCEN Chasn.	4.056	0.148	05/03	0.151	10/03	0.154	10/04		4.509	
Operational Test & Evaluation	WX	Various	0.329								0.329	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			4.385	0.148		0.151		0.154		0.000	4.838	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support	WX	SPAWARSYSCEN Chasn.	5.045								5.045	
Program Management Support	WX	SPAWARSYSCEN Chasn.	5.046	0.111	10/02	0.113	10/03	0.115	10/04		5.385	
Travel			0.305	0.010	10/02	0.010	10/03	0.010	10/04		0.335	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			10.396	0.121		0.123		0.125		0.000	10.765	
Remarks:												
Total Cost			26.001	1.055		1.112		0.959		0.000	29.127	
Remarks:												

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA4**					R-1 ITEM NOMENCLATURE PE 0603553N Surface ASW/1704 ASW Advanced Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**3.542**	**3.184**	**2.506**	**2.698**	**2.758**	**3.328**	**3.391**	**3.450**

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Anti Submarine Warfare (ASW) Advanced Development project provides advanced development demonstration and validation of technology for potential surface sonar and combat system applications. Efforts focus on resolution of technical issues associated with providing capability against the Year 2005 and beyond threat with emphasis on shallow water/littoral area Undersea Warfare (USW) and on demonstration and validation of USW concepts and technology. Key technology areas include active sonar transmissions, advanced signal and data processing, active sonar classification, towed and hull arrays and transducer technology, 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RD RDT&E N/BA4	PE 0603553N Surface ASW	S1704 ASW Advanced Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.542	3.184	2.506	2.698
RDT&E Articles Quantity				

FY98 Prototypes deployed to 7th fleet ships - participated in sea exercises with positive fleet users feedback - mitigated into Advanced Development (ADM) system with laptops since FY01. Integrate to Advanced Process Build (APB) initiates FY02/plan for SQQ-89 A(V) 15 migration FY05-FY07.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603553N Surface ASW	S1704 ASW Advanced Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	3.724	3.219	3.302	3.320
FY04/05 Congressional Controls	3.542	3.184	2.506	2.698
Total Adjustments	-0.182	-0.035	-0.796	-0.622
Summary of Adjustments				
Section 8123 - Management Reform	-0.033			
SBIR/STTR Transfer	-0.040			
Post Production R&D Continuation			-0.388	-0.480
Section 313 PL 107-206: Revised	-0.008			
Naval Warfare Center Funding - Naval Undesea Warfare			0.003	0.005
Naval Working Capitol Funding - Naval Air Warfare			-0.007	-0.007
FY02 BTR (July - 02)	-0.073			
Economic Assumptions (Section 813)	-0.010			
Technical Process Re-engineering			-0.009	-0.009
Business Process Re-engineering			-0.007	-0.007
Streamlining Training Initiating			-0.002	-0.002
Reduction in Support Contract			-0.012	-0.011
FY02 Actuals	-0.018			
NAWC PBD 426			-0.002	
NUWC PBD 426			-0.002	
Non-S&T R&D Offset			-0.271	
PBD203 ACTD Offsets			-0.044	-0.056
NWCF Rates - R&D Fuel			0.002	0.003
Inflation Savings		-0.035		
PBD-604 Nonpay Purchase Inflation			-0.044	
PBD-604 Nonpay Inflation			-0.013	
PBD-604: FY05/09 Inflation				-0.058
Subtotal	-0.182	-0.035	-0.796	-0.622

Schedule:

N/A

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603553N SurfaceASW	S1704 ASW Advanced Development

D. OTHER PROGRAM FUNDING SUMMARY: N/A

E. ACQUISITION STRATEGY: *

Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

F. MAJOR PERFORMERS: **

Naval Air Warfare Center /PAX River, MD – Build the two Air Multistatic Active ASW (MAASW(DT)) systems, lab test these systems, and gain NAVAIR authorization to install and fly this ADM system in P-3C TYCOM Aircraft.
ONR, Arlington, VA/BBN – Participate in two tactical at-sea exercises for FY02. Coordinate with NAWC, NUWC, and Program Office to publish a report on system performance.
Naval Undersea Warfare Center, Newport, RI – Provide management support in working with various administrative and operational organizations to develop and implement teams for MAASW Distant Thunder development and evaluation.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA4**			PROGRAM ELEMENT PE 0603553N Surface ASW			PROJECT NUMBER AND NAME S1704 ASW Advanced Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Multistatic Sonar Development	WR	NUWC Newport	3.339	0.750	12/02	0.500	12/03	0.600	12/04	Continuous	5.189	
Multistatic Sonar Development	WR	BATH MIN	0.021								0.021	
Multistatic Sonar Development	WR	PASCAGOULA MS	0.017								0.017	
Multistatic Sonar Development	WR	NAWC/Key West	0.010								0.010	
Multistatic Sonar Development	WR	NAWC/Pax River	1.213	0.300	12/02	0.100	12/03	0.100	12/04	Continuous	1.713	
Multistatic Sonar Development	CPFF	BBN	2.932	0.400	12/02	0.150	12/03	0.150	12/04	Continuous	3.632	
Multistatic Sonar Development	CPFF	APL/JHU	0.350								0.350	
Multistatic Sonar Development	RCP	FLT. Industry SUP Center	0.010								0.010	
Multistatic Sonar Development	RCP	ONR	0.472								0.472	
Various	Various	Various	0.203	0.339	03/03	0.198	02/04	0.255	01/05	Continuous	0.995	
											0.000	
Subtotal Product Development			8.567	1.789		0.948		1.105		Continuous	Continuous	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA4**

PROGRAM ELEMENT: PE 0603553N Surface ASW

PROJECT NUMBER AND NAME: S1704 ASW Advanced Development

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC/Npt	2.255	0.250	11/02	0.600	11/03	0.705	11/04	Continuous	3.810	
Developmental Test & Evaluation	WR	NAWC/Pax River	0.916	0.170	11/02	0.170	11/03	0.170	11/04	Continuous	1.426	
Developmental Test & Evaluation	CPFF	BBN	0.223	0.400	11/02	0.300	11/03	0.300	11/04	Continuous	1.223	
Developmental Test & Evaluation	WR	SUPSHIP BATH MIN.	0.033							Continuous	0.033	
Developmental Test & Evaluation	WR	NUWC/Keyport	0.933							Continuous	0.933	
Developmental Test & Evaluation	WR	NSWC/Carderock, MD	0.695							Continuous	0.695	
Developmental Test & Evaluation	WR	NSWC/Dahlgren, VA	0.040							Continuous	0.040	
Developmental Test & Evaluation	CPFF	APL/JHU, MD	1.536							Continuous	1.536	
Developmental Test & Evaluation	CPFF	ARL/UT		0.200	11/02	0.100	11/03	0.150	11/04	Continuous	0.450	
Developmental Test & Evaluation	CPFF	Various		0.325	11/02	0.338	11/03	0.218	Various	Continuous	0.881	
Developmental Test & Evaluation	CPFF	Progeny, Inc.	1.217									
Developmental Test & Evaluation	CPFF	IPD	0.055									
Developmental Test & Evaluation	MIPR	U.S. ARMY/MITRE	0.000									
Developmental Test & Evaluation	WR	SPAWAR Systems Center	0.558									
Subtotal T&E			8.461	1.345		1.508		1.543		Continuous	Continuous	

Remarks:

Contractor Engineering Support											0.000	
SBIR												
Government Engineering Support											0.000	
Program Management Support	CPFF	Stanley Assoc.	0.499	0.040	01/03	0.040	01/04	0.040	01/05		0.619	
Travel			0.050	0.010	11/02	0.010	11/03	0.010	11/04		0.080	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management			0.549	0.050		0.050		0.050		Continuous	Continuous	

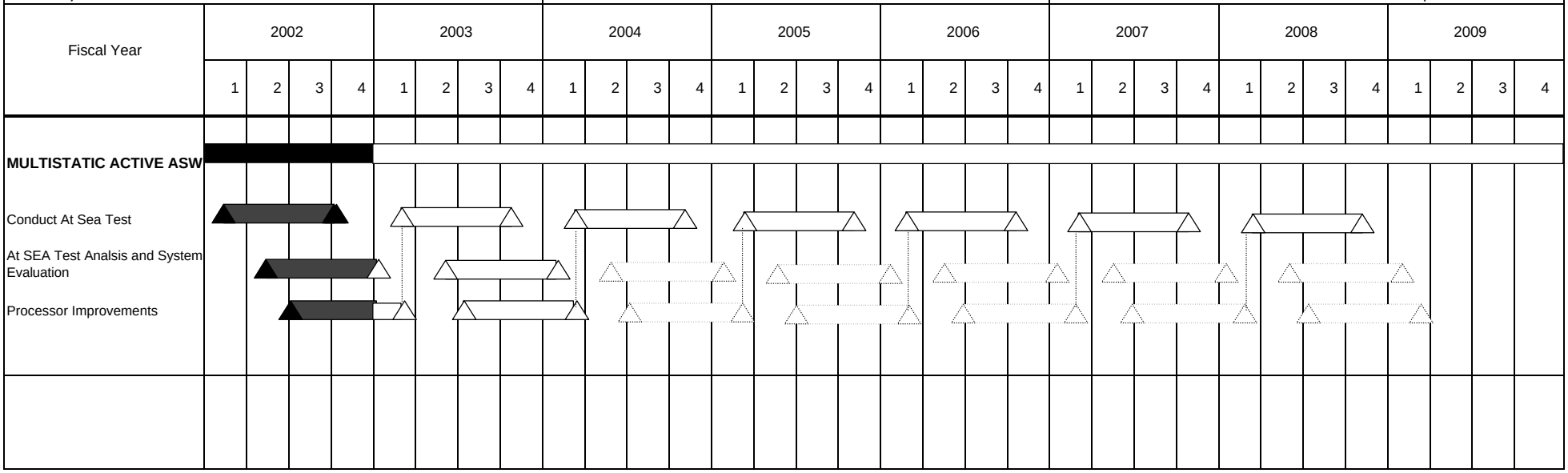
Remarks:

Total Cost			17.577	3.184		2.506		2.698		Continuous	Continuous	

Remarks:

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603553N Surface ASW	PROJECT NUMBER AND NAME S1704 ASW Advanced Development	



R-1 SHOPPING LIST - Item No. 49

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA4**	PROGRAM ELEMENT PE 0603553N Surface ASW				PROJECT NUMBER AND NAME S1704 ASW Advanced Development			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Conduct At Sea Test	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	
Sea Test Analysis and System Evaluation	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q
Processor Improvements	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE PE 0603559N SSGN DESIGN			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**72.162**	**89.743**	**68.988**	**19.499**	**32.072**	**7.357**	**0.000**	**0.000**
SSGN Design/F2413	**28.698**	**89.743**	**68.988**	**19.499**	**32.072**	**7.357**	**0.000**	**0.000**
SSGN Design Acceleration/F2859	**43.464**							

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

Project Unit F2859 SSGN Design Acceleration is a Congressional plus-up.

Defense Emergency Response Funds (DERF) Funds: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	PE 0603559N SSGN	F2413 SSGN Design

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	18.388	4.677	6.226	0.304
RDT&E Articles Quantity				

U) FY02 - FY05 accomplishments and plans consist of conducting component and sub-system research and development activities, ship control algorithm development and Weapons Support Systems Land Based Evaluation Facility (WSSLBEF) modifications to support developmental testing.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	36.250	45.302	35.700	0.000
RDT&E Articles Quantity				

(U) FY02 accomplishments consisted of conducting underwater missile launch, Multiple-All-Up Round Canister (MAC) risk reduction demonstration/validation preparations including computer modeling and validation and Attack Weapon Control System (AWCS) systems engineering and integration. FY03 plans are to complete underwater missile launch and Multiple-All-Up Round Canister (MAC) risk reduction including computer modeling and demonstration/validation preparations, and commence Multiple All Up Round Canister system development and demonstration (SDD). FY04 plans will complete Multiple All Up Round Canister system development and demonstration (SDD) activities.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	12.787	30.680	22.243	17.462
RDT&E Articles Quantity				

(U) FY02 - FY 05 accomplishments and plans consist of program management, engineering management and support services, Live Fire Test and Evaluation, Test and Evaluation, safety program management, ship control system development, and hydrodynamic studies.

R-1 SHOPPING LIST - Item No. 50

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	PE 0603559N SSGN	F2413 SSGN Design

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.737	9.084	4.819	1.733
RDT&E Articles Quantity				

(U) FY02 - FY05 accomplishments and plans consist of Non-Propulsion Electronics System (NPES) development and non-recurring system development including Data Processing System (DPS), Global Command and Control System (GCCS-M), Tactical Integrated Digital System (TIDS), AN/BQN-17, NPES/AWS Wide Area Network, Common Submarine Radio Room (CSRR) and Interior Communications/Data Transfer System (IC/DTS).

R-1 SHOPPING LIST - Item No. 50

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E,N/BA-4	PE 0603559N SSGN	F2413 SSGN Design	

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY2003President's Budget:	74.337	82.527	44.773	19.857
FY2004President's Budget:	72.162	89.743	68.988	19.499
Total Adjustments	-2.175	7.216	24.215	-0.358
Summary of Adjustments				
Reprogramming		9.195		
FY2002 SBIR (dtd 5-15-02)	(1.074)			
Revised Economic Assumptions	(0.359)	(0.463)		
FY02 BTR (July 02)	(0.592)			
FY02 Actuals	(0.150)			
Miscellaneous adjustments			25.679	(0.398)
NWCF RATES - Naval Undersea Warfare Center (NUWC)			0.045	0.028
NWCF RATES - Naval Surface Warfare Center (NSWC)			(0.006)	(0.006)
Business Process Reform		(0.367)		
IT Cost Growth		(0.169)		
Inflation Savings		(0.974)		
FY03 FFRDC Reduction		(0.006)		
NSWC Rates			(0.003)	
NUWC Rates			(0.011)	
NSWC Rates - R&D Fuel			0.010	0.018
Nonpay Purchases Inflation			(1.149)	
Nonpay Inflation			(0.350)	
Subtotal	(2.175)	7.216	24.215	(0.358)

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	PE 0603559N SSGN	F2413 SSGN Design

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
(U)BLI 201700 /SSGN CONVERSION SCN	353.717	995.741	1167.300	681.339	0.000	0.000	0.000	0.000	0	3,198.097

E. ACQUISITION STRATEGY: *

(U) To refuel, overhaul, convert and deliver four (4) Trident Submarines into land attack strike and Special Operating Force platforms. The SSGN program will utilize a streamlined acquisition approach. Due to low technical risk, the Department approved the SSGN program to proceed directly to Milestone C.

F. MAJOR PERFORMERS: **

Perot Systems Government Services, Alexandria, Virginia: Technical support and program management support.
Electric Boat, Groton, Connecticut: Conversion design studies.
NSWC Carderock, Bethesda, Maryland: Hydrodynamic studies, safety program management, ship control system development, T&E , Systems Integration Team (SIT) support, MAC design.
NUWC Newport, Newport, Rhode Island: Engineering support and NPES design
Northrup Grumman Marine Systems, Sunnyvale, CA.: MAC DEM/VAL
General Dynamics Advanced Information Systems, Pittsfield, MA: AWCS
Naval Warfare Assessment Station, Corona, CA.: MAC Launcher support

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**			PROGRAM ELEMENT PE 0603559N SSGN			PROJECT NUMBER AND NAME F2413 SSGN Design						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Design Studies	SS/CPFF	Electric Boat, Groton, CT	37.210	4.677	Feb-03	6.226	Nov-03	0.304	Nov-04	0.000	48.417	48.417
Systems Engineering	WX	NSWC Carderock, MD	7.373	6.611	Oct-02	2.415	Oct-03	2.457	Oct-04	5.519	24.375	N/A
Systems Engineering	WX	NUWC, Newport, RI	8.708	7.680	Oct-02	4.414	Oct-03	3.325	Oct-04	4.802	28.929	N/A
MAC Launcher DEM/VAL & SDD	C/CPIF	Northrup Gruman, Sunnyvale	0.000	30.857	Dec-02	22.690	Dec-03	0.000	N/A	0.000	53.547	74.201
MAC Launcher/Facilities	C/CPFF	Lockheed Martin , Sunnyvale	3.398	0.193	Feb-03	0.000	N/A	0.000	N/A	0.000	3.591	N/A
AWCS/Facilities	C/CPIF	General Dynamics, Pittsfield,	11.564	7.805	Dec-02	0.000	N/A	0.000	N/A	0.000	19.369	19.369
MAC Launcher/AWCS/SE&I	WR	NSWC Dalghren, Va	3.046	0.209	Feb-03	0.000	N/A	0.000	N/A	0.000	3.255	N/A
MAC Launcher/Facilities	WR	NUWC, Newport, RI	1.811	0.867	Dec-02	0.000	N/A	0.000	N/A	0.000	2.288	N/A
MAC Launcher	WR	NWAS, Corona, CA.	0.741	0.180	Feb-03	13.010	Nov-03	0.000	N/A	0.000	13.931	N/A
MAC Launcher/AWCS/SE&I/Facilities	C/CPFF	JHU/APL, Laural, MD.	5.435	1.400	Dec-02	0.000	N/A	0.000	N/A	0.000	6.835	6.835
MAC Launcher	RC/WR	NAVAIR, Patuxent River, MD	3.813	1.576	Nov-02	0.000	N/A	0.000	N/A	0.000	5.389	5.390
MAC Launcher	IP	Eglin AFB, Fla.	0.000	1.102	Feb-03	0.000	N/A	0.000	N/A	0.000	1.102	N/A
MAC Launcher	WR	NAWC Pt. Mugu, Ca.	0.000	0.401	Feb-03	0.000	N/A	0.000	N/A	0.000	0.401	N/A
Systems Engineering	Various	Various	10.001	18.104	Various	6.659	Various	2.474	Various	4.308	41.546	N/A
Misc.	Various	Various	0.232	0.286	Various	0.342	Various	0.298	Various	0.494	1.652	N/A
Subtotal Product Development			93.331	81.948		55.756		8.858		15.123	255.016	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**		PROGRAM ELEMENT PE 0603559N SSGN				PROJECT NUMBER AND NAME F2413 SSGN Design						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC, Carderock, MD	0.048	0.135	Oct-02	0.255	Oct-03	0.638	Oct-04	2.395	3.471	N/A
Developmental Test & Evaluation	WX	NUWC, Newport, RI	0.342	3.929	Oct-02	9.712	Oct-03	4.773	Oct-04	3.516	22.272	N/A
Test and Evaluation	RC/WR	NAVAIR Patuxent River, MD.	0.000	0.000	N/A	0.000	N/A	1.800	Oct-04	8.882	10.682	N/A
Live Fire Test & Evaluation	WX	NSWC, Carderock, MD	0.400	1.086	Oct-02	0.791	Oct-03	0.700	Oct-04	1.869	4.846	N/A
Miscellaneous	Various	Various	0.060	0.120	Various	0.263	Various	0.417	Various	3.615	4.475	N/A
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.850	5.270		11.021		8.328		20.277	45.746	
Remarks:												
Contractor Engineering Support	C/MAC	Various	4.324	2.388	Nov-02	2.211	Nov-03	2.313	Nov-04	4.029	15.265	15.265
Government Engineering Support											0.000	
Program Management Support	Various	Various	1.192	0.137	N/A	0.000	N/A	0.000	N/A	0.000	1.329	1.329
Labor (Research Personnel)											0.000	
Overhead											0.000	
											0.000	
Subtotal Management			5.516	2.525		2.211		2.313		4.029	16.594	
Remarks:												
Total Cost			99.697	89.743		68.988		19.499		39.429	317.356	
Remarks:												

R-1 SHOPPING LIST - Item No. 50

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE Advanced Submarine Systems Development/0603561N			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**122.614**	**129.601**	**52.744**	**158.595**	**74.686**	**75.290**	**272.209**	**319.708**
Adv. Sub. Systems Development/S2033	**47.644**	**47.655**	**25.404**	**77.011**	**28.629**	**28.590**	**126.375**	**163.098**
Advanced Composite Sail/S2861	**3.946**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Electromechanical Actuator Dev/S9188	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Rotary Electromagnetic Torpedo Launcher/S9191	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Adv. Sub. Combt Sys. Dev/S0223	**60.686**	**71.092**	**27.340**	**81.584**	**46.057**	**46.700**	**145.834**	**156.610**
Conf Array Vel Sensor/S2753	**2.084**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Fiber Optic Multi-Line Towed Array/S9189	**0.000**	**2.445**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Universal Gravity Module/S9190	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
MK 48 ADCAP M M P/ARCI/S9039	**8.254**	**5.478**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

Project Unit S2033: The Advanced Submarine Research and Development (R&D) program performs three functions: it is the fundamental transition point for Hull, Mechanical and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, it is the starting point for serious submarine platform design & naval architecture products, and it is the sponsor to operate unique R&D experimentation, modeling and simulation facilities. It is a non-acquisition (non-ACAT) program. 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). The program transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency. This program is structured to support near term VIRGINIA Class insertion, future submarine concepts and 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. This program sponsors advanced submarine design development and concepts that can radically transform the design architecture of future submarines. This program operates Large Scale Vehicles 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; and operates and supports the Intermediate Scale Measurement System.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**	R-1 ITEM NOMENCLATURE Advanced Submarine Systems Development/0603561N

Project Unit S0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research (ONR), Future Naval Capabilities and the Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A) and Advanced Processing Build-Tactical (APB-T) tactical control. APB's develop and demonstrate improvements to current and future sonar/combat control systems. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to specific platform applications. Congress has authorized the following FY 03 funding: $2.800M to develop Conformal Acoustic Velocity Sonar (CAVES) technology, $3.500M for Submarine Payloads and Sensors, $6.000M for High Performance Metal Fiber Brushes, and $2.000M for Advanced Composite Sail.

Project Unit S2861 is authorized by Congress to develop structural technology to address the incorporation of full-scale Advanced Sail design features and the complete spectrum of full-scale load specifications.

Project Units S2753 and S9039 are authorized by Congress to develop Conformal Acoustic Velocity Sonar (CAVES) technology and MK48 ADCAP torpedo improvements.

Project Unit S9188 is authorized by Congress to develop Electromechanical Actuators.

Project Unit S9189 is authorized by Congress to develop Fiber Optic Mulit-Line Towed Array.

Project Unit S9190 is authorized by Congress to develop Universal Gravity Modules.

Project Unit S9191 is authorized by Congress to develop Rotary Electromagnetic Torpedo Launcher.

R-1 SHOPPING LIST - Item No. 51

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME S2033/Advanced Submarine Systems Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**47.644**	**47.655**	**25.404**	**77.011**	**28.629**	**28.590**	**126.375**	**163.098**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

Project Unit S2033: The Advanced Submarine Research and Development (R&D) program performs three functions: it is the fundamental transition point for Hull, Mechanical and Electrical (HM&E) technologies from Science and Technology (S&T) to platforms, it is the starting point for serious submarine platform design & naval architecture products, and it is the sponsor to operate unique R&D experimentation, modeling and simulation facilities. It is a non-acquisition (non-ACAT) program. 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). The program transitions technologies developed by Navy technology bases, the private sector, and the Defense Advanced Research Projects Agency. This program is structured to support near term VIRGINIA Class insertion, future submarine concepts and 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. This program sponsors advanced submarine design development and concepts that can radically transform the design architecture of future submarines. This program operates Large Scale Vehicles 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; and operates and supports the Intermediate Scale Measurement System.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Developmen	S2033/Advanced Submarine Systems Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Stealth & Propulsion/Subtotal Cost	10.984	17.300	6.072	19.940
RDT&E Articles Quantity				

Develop advanced Electromagnetic (EM) silencing techniques for VIRGINIA Class insertion (FY02, FY03). Provide design guidance, tools, and hardware for the control of radiated noise levels in current and future submarines through the mitigation of Internal Transmission Paths (decks, mounts etc…) (FY02, FY03). Develop advanced coating materials and distribution strategies to facilitate the application of new passive and active sonar array concepts (FY02, FY03). Continued development of advanced submarine propulsor technologies (FY02 - FY05). Continues development of distributed pump propulsion technology and electric drive technologies (FY02 - FY05).

	FY 02	FY 03	FY 04	FY 05
Hydrodynamics/Hydroacoustics/Subtotal Cost	4.111	8.458	1.870	12.412
RDT&E Articles Quantity				

Integrated Computational Design Environment analysis of hydrodynamic and hydroacoustic submarine performance (Maneuvering and Control) (FY02, FY03, FY05). Continue and transition Composite Sail (FY02 - FY05).

	FY 02	FY 03	FY 04	FY 05
Infrastructure/Subtotal Cost	17.685	14.149	13.563	22.933
RDT&E Articles Quantity				

Continue operations and support for the Large Scale Vehicle (largest unmanned autonomous submarine in the world), Hydroacoustic/Hydrodynamic Test Center(H/HTC), Intermediate Scale Measurement System (ISMS) (all years).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	Advanced Submarine Systems Development/S0223

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Total Ownership/Subtotal Cost	2.500	1.167	1.305	1.185
RDT&E Articles Quantity				

Initiated full scale land based testing of Advanced Metal Fiber Brushes (FY02 - FY05). Install on submarine a complete set of Advanced Metal Fiber Brushes on a ship service motor generator set. Test on submarine a complete set of Advanced Metal Fiber Brushes on a ship service motor generator set. Install and evaluate on submarine a production of Advanced Metal Fiber Brushes on ship service motor generator sets.

	FY 02	FY 03	FY 04	FY 05
Payloads & Sensors/Subtotal Cost	8.786	2.941	0.000	18.000
RDT&E Articles Quantity				

At-sea SSGN transformational Payloads & Sensors Demonstration, stealthy affordable capsule system and ISR&TA processing demonstration (FY02, FY03).

	FY 02	FY 03	FY 04	FY 05
Other/Subtotal Cost	3.578	3.640	2.594	2.541
RDT&E Articles Quantity				

Continued Mission and Technology Assessment (M&TA)/Hull, Mechanical & Electrical (HM&E) Conform Studies and New Technology Assessment support (all years).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	S2033/Advanced Submarine Systems Development/0603561N

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	49.457	48.784	54.204	53.601
Current BES/President's Budget: (FY04/05 Pres Controls)	47.644	47.655	25.404	77.011
Total Adjustments	-1.813	-1.129	-28.800	23.410
Summary of Adjustments				
Management Refo	-0.437			
SBIR/STTR Transfer	-0.866			
PL 107-206	-0.105			
Business Process Reform		-0.195		
IT cost growth		-0.09		
Contractor Support Services			-0.345	-0.383
Technical Process Reengineering			-0.152	-0.144
Business Process Reengineering			-0.114	-0.108
Streamlining training initiative			-0.038	-0.036
Reduction in Support Contractors			-0.19	-0.18
Overhead and direct cost reduction			-0.074	-0.053
Economic Assumption	-0.133	-0.274		
Contractor support			0.002	0.003
FFRDC		-0.053		
Inflation Savings		-0.517		
NWCF rates			0.124	0.157
Reporgrammings	-0.272		-27.423	25.814
Non pay inflation			-0.590	
FY05/09 inflation				-1.660
Subtotal	-1.813	-1.129	-28.800	23.410

Schedule: not applicable.
Technical: not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Developmer	Advanced Submarine Systems Development/S2033

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not applicable.										

E. ACQUISITION STRATEGY:

Competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

F. MAJOR PERFORMERS:

Newport News Shipbuild, Newport News, Va R&D Support	12/02	12/03	12/04
Electric Boat Corp., Groton, CT. R&D support	12/02	12/03	12/04
Noesis, Inc., Manassas, Va. Fiber Brush R&D	12/02	12/03	12/04
Naval Surf Warfare Ctr, Carderrock, MD. R&D support			
Naval Undersea Warfare Ctr, Newport, R.I. R&D support			
Penn State University/AR Lab, State College, PA	12/02	12/03	12/04
John Hopkins/APL, Laurel, MD R&D support	12/02	12/03	12/04

R-1 SHOPPING LIST - Item No. 51

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	PE0603561N Advanced Submarine Systems Development	Advanced Submarine Systems Development/S2033

Cost Categories (Tailor to WBS, or System/ Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Targ Value of Contract
Systems Engineering	S/CPFF	NNS Newport News, VA	47.750	0.500	12/02	0.000		0.000		24.200	78.450	67.800
Systems Engineering	S/CPIF	NNS Newport News, VA	19.932	1.000	12/02	2.000	12/03	5.000	12/03	59.200	87.784	80.000
Systems Engineering	S/CPFF	EB Groton, CT	51.460	3.023	12/02	1.500	12/03	5.000	12/03	CONT.	CONT.	37.300
Systems Engineering	WR	NSWC Bethesda, MD	176.662	11.400		7.828		14.000		CONT.	CONT.	
Systems Engineering	S/CPFF	ARL/PSU, State College,PA	30.060	5.800	12/02	3.304	12/03	7.000	12/03	CONT.	CONT.	
Systems Engineering	S/CPFF	APL/JHU	0.950	0.400		0.400		3.000				
Systems Engineering	WR	NUWC Newport, RI	72.867	0.600		0.710		5.000		CONT.	CONT.	
Systems Engineering	WR	NRAD San Diego, CA	1.410	0.200		0.410		0.420				
Systems Engineering	S/CPFF	KAPL Schenectady, NY	14.800							CONT.	CONT.	
Systems Engineering	S/CPFF	ADI	0.674									
Program Management	CPFF	Anteon	0.525	0.704	10/02	0.200	10/03	0.028	10/03			
Program Management	CPFF	SPA	0.025									
Subtotal Product Development			417.115	23.627		16.352		39.448				

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:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**		PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Developmen				PROJECT NAME AND NUMBER 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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY05 Cost	FY05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Bethesda, MD	33.815	15.135		6.000		15.000		CONT.	CONT.	
Developmental Test & Evaluation	S/CPFF	NNS Norfolk, VA	11.837	0.600	12/02	0.500	12/03	5.000	12/04	66.800	83.086	67.800
Developmental Test & Evaluation	S/CPFF	EB Groton, CT	21.403	1.480	12/02	0.500	12/03	5.000	12/04	21.000	45.383	37.300
Developmental Test & Evaluation	S/CPFF	DARPA Fairfax, VA	3.650							0.000	3.650	3.000
Developmental Test & Evaluation	S/CPFF	RAYTHEON	7.670	2.292		0.000		10.143				
Developmental Test & Evaluation	S/CPFF	NOESIS	7.501	1.665	12/02	1.302	12/03	1.200	12/04	0.000	10.486	1.200
Developmental Test & Evaluation		RAND	0.555	0.500		0.000						
Developmental Test & Evaluation	S/CPFF	SPA	2.072	0.700		0.200		0.500		0.000	3.472	0.600
Subtotal T&E			88.503	22.372		8.502		36.843				
Remarks:												
Contractor Engineering Support	S/CPFF	NNS Norfolk, VA	3.100								3.100	
Contractor Engineering Support	S/CPFF	EB Groton, CT	3.027								3.027	
Travel			0.215	0.100	11/02	0.050	11/03	0.100	11/04			
Government Engineering Support	WR	NSWC Bethesda, MD	1.000								CONT.	
Contractor Engineering Support		Rosenblatt	0.325								0.325	
Contractor Engineering Support		SPA	0.620	0.100		0.080		0.200				
Contractor Engineering Support		DDL Omni	0.040									
Contractor Engineering Support		EG&G	0.280									
Contractor Engineering Support		JJMA	0.589									
Contractor Engineering Support		ADI	0.155								0.155	
Contractor Engineering Support		Various	0.488	1.456	12/02	0.420	12/03	0.420	12/04			
Subtotal Management			9.839	1.656		0.550		0.720		0.000	11.387	
Remarks:												
Total Cost			478.822	47.655		25.404		77.011				

R-1 SHOPPING LIST - Item No. 51

Exhibit R-3, Project Cost Analysis

CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	Advanced Submarine Systems Development/S2033

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ADV. PROPUSLOR DESIGN DEVELOPMENT	Initiate				hardware manu.				hardware comp.				next generation propulsor/hull/control surface concept development																			
Transition propulsor component tech. to VA class																																
ADV. COMPOSITE SAIL			vendor qualification								fab & demo prototype																					
Transition Adv. comp. sail to VA class																																
INFRASTRUCTURE					LSV 2 delivery		LSV 2 774 support				LSV 2 battery																					
Planned replacement of class/unclass computer server at Hydrotech Center																																
Technology refresh of Intermediate Scale Meas. Sys.																																
ADV. METAL FIBER BRUSHES			full scale demo commutator																													
Transition Adv. Metal Fiber Brushes to PMS 392																																

R-1 SHOPPING LIST - Item No. 51

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE0603561N Advanced Submarine Systems Development				PROJECT NUMBER AND NAME Advanced Submarine Systems Development/S2033			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Initiate propulsor advanced design developments	2Q							
Begin hardware manufacture for Adv. Propulsor concepts		1Q						
Complete manufacture of Advanced Propulsor concepts			1Q					
Adv. Propulsor concepts LSV trial			2Q					
Transition propulsor component technology to VA class			3Q					
Next generation propulsor/hull/control surface concept dev.				1Q				
Complete VA 4th gen. propulsor trial		1Q						
Initiate Advanced Maneuvering and Control development	3Q							
Demo Adv. Maneuvering & Control concepts on LSV 2			2Q					
Conduct Composite Adv. Sail vendor qualification	3Q							
Select Composite Adv. Sail Vendor	4Q							
Fabricate and demo full scale composite Adv. Sail prototype			1Q					
Comp.Adv. Sail complete design criteria and req. document				1Q				
Complete Comp. Adv. Sail development, transition to VA class				1Q				
VA 4th generation propulsor trail LSV 1	4Q							
Troubleshoot SEAWOLF acoustic issues LSV 1	3Q, 4Q	1Q, 2Q, 3Q, 4Q						
Conduct LSV 1 maneuvering characterization trial	3Q							
Accept delivery of LSV 2 to Navy		1Q						
SEAWOLF steel sail trail, LSV 1		2Q						
LSV evaluation of propulsor component improvements		2Q						
LSV 2 hydrodynamic performance trial		3Q						
LSV 2 maneuvering characterization trial		4Q						
LSV 2 SSN 774 support		3Q						
LSV 2 RAV install hull treatment on pressure hull and sail		4Q						
Complete "no sail" trials, LSV 1		2Q						
Procure new LSV 2 battery		3Q						
Initiate VA advanced sea trials, LSV 2			3Q					
Complete VA advanced sail trials, LSV 2			4Q					
LSV 2 RAV install, new LSV 2 battery			2Q					
LSV 2 ODAS refresh				1Q				
Procure new LSV 2 battery						1Q		
Planned replacement of class/unclass comp. serv. @ HTC					4Q			
Technology refresh of Intermediate Scale Meas. System		4Q						
Demo commutator operation for Adv. Brush - full scale	3Q							
Comp. Adv. Metal Brushes transition to PMS 392				3Q				

R-1 SHOPPING LIST - Item No. 51

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603561N/Advanced Submarine System Development				PROJECT NUMBER AND NAME S0223/Submarine Combat System Improv (Adv)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**60.686**	**71.092**	**27.340**	**81.584**	**46.057**	**46.700**	**145.834**	**156.610**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

Project Unit S0223: The Advanced Submarine Combat Systems Development non-acquisition (Non-ACAT) program supports the Navy Submarine Acoustic Superiority and Technology Insertion Initiatives by the application of advanced development and testing of sonar and combat control systems improvements. This program element transitions technologies developed by Navy technology bases, the private sector, Office of Naval Research Future Naval Capabilities and Defense Advanced Research Projects Agency. The program addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions including peacetime engagement, surveillance, battlespace preparation, deterrence, regional sea denial, precision strike, task group support, and ground warfare support. Prototype hardware / software systems are developed to demonstrate technologically promising system concepts in Laboratory and at-sea submarine environments. Specifically, the focus of the technology efforts will be Advanced Processing Build-Acoustic (APB-A) and Advanced Processing Build-Tactical (APB-T). APB's develop and demonstrate improvements to current and future sonar/combat control systems. Program office supports international information exchange agreements. Program is funded under demonstration and validation because it develops and integrates hardware for experimental test related to platform applications. Congress has authorized the following FY 03 funding: $2.800M to develop Conformal Acoustic Velocity Sonar (CAVES) technology, $3.500M for Submarine Payloads and Sensors, $6.000M for High Performance Metal Fiber Brushes, and $2.000M for Advanced Composite Sail.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	S0223/Submarine Combat System Improv (Adv)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Advanced Sonar System Processing/Subtotal Cost	26.128	23.092	18.840	39.784
RDT&E Articles Quantity				

Advanced Processing Build-Acoustic (APB-A) has continued improvements in sonar detection and classification via improved algorithms and automation for the thin line towed arrays, is implementing the intial Precision Underwater Mapping functionality, improved sonar planning and environmental monitoring and initiated processing enhancements for the Hull and Sphere Arrays. Future efforts will focus on improved High Frequency Active capabilites, and enhanced processing capabilities for the Sphere, Hull and TB-16 Arrays as well as test equipment upgrades.

	FY 02	FY 03	FY 04	FY 05
Advanced Tactical Control/Subtotal Cost	10.000	10.000	8.500	16.500
RDT&E Articles Quantity				

Advanced Processing Build-Tactical (APB-T) delivered the first automated Close Encounter Management tool-set for submarine combatants. Future efforts will focus on enhancing this functionality through refined all source data fusion algorithms and in improving the tactical commander's ability to manage close in and high density scenarios through advanced target motion analysis, contact management, tactical scene rendering, sensor performance prediction models, search planning, uncertainty management, acoustic and non-acoustic vulnerability management, close encounter decision management, automation. In FY 05 start advanced processing techniques in data fusion and state estimation leveraged from ONR/DARPA as well as test equipment upgrades.

	FY 02	FY 03	FY 04	FY 05
Advanced Hull Arrays/Subtotal Cost	2.500	9.800	0.000	13.000
RDT&E Articles Quantity				

The Advanced Hull Arrays project is developing improved, larger aperture sonars in order to restore acoustic superiority over potential threat submarines. The end products will be large aperture sail, flank and bow array Advanced Development Models (ADMs). Efforts continue development and testing of a Conformal Acoustic Velocity Sonar (CAVES) Large Vertical Array (LVA) for ultimate transition to VIRGINIA Class. In FY 05, commence Second Low Cost Conformal Array (SLCCA) with active capability and start improvements to a Sail Window Conformal Array (SWCA) ADM both of which support collision avoidance and mine detection.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	S0223/Submarine Combat System Improv (Adv)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
High Frequency Sonar Program/Subtotal Cost	5.700	2.800	0.000	3.500
RDT&E Articles Quantity				

The High Frequency Sonar Program develops products to support Battlespace Preparation and Anti-Submarine Warfare. These include advanced Computer Aided Detection (CAD) for Precision Underwater Mapping (PUMA), Computer Aided Classification (CAC) and Low Probability of Intercept and Adaptive Clutter Suppression capabilities for Advanced Submarine Warfare (ASW). Deliverables will be PUMA and ASW CAC source code for incorporation into APB. In FY 05, make further improvements in HF Sonar Tactical Decision Aids, PUMA, CAD/CA and Auto Sonar Calibration.

	FY 02	FY 03	FY 04	FY 05
Multi-Line Towed Array Test & Evaluation/Subtotal Cost	0.900	0.900	0.000	2.000
RDT&E Articles Quantity				

Evaluated single line array self noise at Lake Pend Oreille (LPO) test. Evaluated 3 different VIM configurations at lake test. Completed 3 line array design and fabrication. The Multi-Line Towed Array Test & Evaluation program conduct 3-line sea test on Research Vehicle and submarine, perform data analysis, and initiate transition to Engineering Development Model (EDM) development. In FY 05, start advanced develoment of next generation submarine towed array concepts leveraging innovative mechanical, fiber optic and other sensor technologies.

	FY 02	FY 03	FY 04	FY 05
Payloads/Senors Program/Subtotal Cost	12.600	16.500	0.000	6.800
RDT&E Articles Quantity				

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 by 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. In FY 05, start up new technology demonstrations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	S0223/Submarine Combat System Improv (Adv)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Advanced Sonar System Processing/Subtotal Cost	2.858	0.000	0.000	0.000
RDT&E Articles Quantity				

Fiber Optic Technology Transition - Risk reduction to assure smooth transition of Fiber Optic Towed Array technology to the Fiber Optic TB-29 program.

	FY 02	FY 03	FY 04	FY 05
Adv. Sub. Systems Dev./Subtotal Cost	0.000	8.000	0.000	0.000
RDT&E Articles Quantity				

BRUSH - metal fiber brush and brush holder design suitable for transition to a program to install them on fleet SSMG sets.

SAIL - Further development of damage prediction techniques for transient events by developing and validating models that predict damage development in thick section composites.
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	FY 02	FY 03	FY 04	FY 05
Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603561N Advanced Submarine Systems Development	S0223/Advanced Submarine Systems Development/0603561N

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	61.309	58.605	59.925	57.589
FY04/05 Congressional Controls	60.686	71.092	27.340	81.584
Total Adjustments	-0.623	12.487	-32.585	23.995
Summary of Adjustments				
Reprogrammings			-32.655	23.906
Management Refo	-0.541			
PBD-630 FFRDC	-0.117			
FY2002 SBIR (dtd 5-15-02)	-1.204			
SYSCOM Contractor support		0.000	0.009	0.012
Sec. 313, PL 107-206: Revised	-0.129			
NWC F rates			0.061	0.077
FY02 BTR (July-02)	1.858			
Business Process Reform		-0.297		
Economic Assumptions (Sec. 813)	-0.170	-0.419		
IT Cost Growth (Sec. 8109)		-0.137		
Undistributed Reductions	-0.320	-0.960		
Conformal Acoustic Velocity Sensors		2.800		
High Performance Metal Fiber Brushes		6.000		
Advanced Composite Sail		2.000		
Submarine Payloads and Sensors		3.500		
Subtotal	-0.623	12.487	-32.585	23.995

Schedule:

Not Applicable.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603561N/Advanced Submarine System Development	S0223/Submarine Combat System Improv (Adv)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

Not applicable.

E. ACQUISITION STRATEGY: * Plan to use competitively awarded contracts from Broad Agency Announcement (BAA) solicitations.

F. MAJOR PERFORMERS: **

Naval Undersea Warfare Center, Newport, R.I. R&D support. Naval Research Laboratory, Washington, DC. Naval Surface Warfare Center, Carderock, MD. R&D Support. John Hopkins University/Applied Physics Lab, Laurel, MD R&D support. Applied Research Lab., The University of Texas, Austin, TX. R&D Support. MITRE Corporation, McLean, VA R&D Support. Lincoln Lab, Cambridge, MA R&D Support. Digital Systems Resource, Fairfax, VA. R&D Support. Lockheed Martin, Manassas, VA R&D Support. Raytheon, Portsmouth, RI R&D Support. (All performers support APB (A) and APB(T).

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

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

PROGRAM ELEMENT: 0603561N/Advanced Submarine System Development

PROJECT NUMBER AND NAME: S0223/Submarine Combat System Improv (Adv)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	WR	NUWC Newport, RI	52.017	12.275	10/02	7.175	10/03	29.175	10/04	CONT.	CONT.	
Product Development	RCP	NUWC Newport, RI	1.000	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NRL/Washington	3.900	0.800	10/02	0.800	10/03	1.100	10/04	CONT.	CONT.	
Product Development	RCP	NRL/Washington	0.490	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NSWC Carderock, MD	9.359	1.400	10/02	0.000	10/03	1.900	10/04	CONT.	CONT.	
Product Development	RCP	NSWC Carderock, MD	0.036	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	WR	NSWC Dahlgren	0.128	0.080	10/02	0.080	10/03	0.080	10/04	CONT.	CONT.	
Product Development	PD	ONI, Washington	1.885	0.900	12/02	0.900	12/03	0.900	12/04	CONT.	CONT.	
Product Development	C/CPFF	Lockheed-Martin,VA	9.621	4.314	12/02	0.800	12/03	1.800	12/04	CONT.	CONT.	
Product Development	C/CPFF	Sanders Assoc. (L-M),NH	2.652	0.750	12/02	0.000	12/03	0.000	12/04	CONT.	CONT.	
Product Development	RCP	NSMA	0.495	0.180	11/02	0.180	12/03	0.180	11/04	CONT.	CONT.	
Product Development	MIPR	U.S. Army/MITRE	5.240	1.800	12/02	1.200	12/03	1.800	12/04	CONT.	CONT.	
Product Development	MIPR	U.S. Air Force/MIT Lincoln Labs	4.120	1.500	12/02	1.500	12/03	1.500	12/04	CONT.	CONT.	
Product Development	RCP	ONR/MCCI	2.800	0.000		0.000		0.000		CONT.	CONT.	
Product Development	MIPR	METRON	1.050	0.000		0.000		0.000		CONT.	CONT.	
Product Development	C/CPFF	Progeny, VA	1.650	0.440	12/02	0.000	12/03	0.940	12/04	CONT.	CONT.	
Product Development	C/CPFF	BBN, VA	2.309	0.927	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	RCP	ONR/GTRI	2.050	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Product Development	SS/CPFF	APL/JHU, MD	22.901	7.200	01/03	7.200	01/04	11.200	01/05	CONT.	CONT.	
Product Development	SS/CPFF	APL/UW, WA	0.125	0.050	12/02	0.050	12/03	0.050	12/04	CONT.	CONT.	
Product Development	SS/CPFF	ARL/UT, TX	18.143	3.415	12/02	1.500	12/03	1.500	12/04	CONT.	CONT.	
Product Development	SS/CPFF	ARL/PSU, PA	1.525	0.350	12/02	0.000	12/03	0.350	12/04	CONT.	CONT.	
Product Development	MD	ARL/PSU, PA	0.692	0.150	01/03	0.150	01/04	0.150	01/05	CONT.	CONT.	
Product Development	WR	NAVAIR PAX/NSWC Indian H	0.110	0.030	10/02	0.030	10/03	0.030	10/04	CONT.	CONT.	
Product Development	WR	SPWAR, CA	0.500	0.140	10/02	0.140	10/03	0.140	10/04	CONT.	CONT.	
Product Development	PD	SPWAR, CA	0.738	0.400	10/02	0.400	10/03	0.400	10/04	CONT.	CONT.	
Product Development	C/CPFF	DSR, VA	13.300	3.600	12/02	3.216	12/03	5.515	10/04	CONT.	CONT.	
Product Development	WR	COMSUBLANT	0.195	0.100	10/02	0.100	10/03	0.100	10/04	CONT.	CONT.	
Product Development	C/CPFF	Electric Boat, CT	5.603	0.000		0.000		0.000		CONT.	CONT.	
Product Development	CPFF	NNS, VA	0.000	0.000		0.000		0.000		CONT.	CONT.	
Product Development	MIPR	DARPA, VA	21.600	16.500	12/02	0.000	12/03	`	12/04	CONT.	CONT.	
Product Development	Various	Various	2.645	0.000	Various	0.000	Various	4.397	Various	CONT.	CONT.	
Product Development	C/CPFF	Northrop Grumman	0.000	1.100	02/03	0.000		0.000		CONT.	CONT.	
SBIRs / BAAs	C/CPFF	Various	5.625	1.625	Various	0.000	Various	10.177	Various	CONT.	CONT.	
Advanced Towed Array BAA	C/CPFF	Lockheed Martin, NY	1.315	0.000		0.000		0.000		CONT.	CONT.	
Subtotal Product Development			195.819	60.026		25.421		73.384		0.000	354.650	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4**		PROGRAM ELEMENT 0603561N/Advanced Submarine System Development				PROJECT NUMBER AND NAME S0223/Submarine Combat System Improv (Adv)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	S/CPFF	NOESIS		6.000	02/03	0.000		0.000			6.000	
Development Test & Evaluation	S/CPFF	EB Groton, CT		0.600	02/03	0.000		0.000			0.600	
Development Test & Evaluation	S/CPFF	NNS Norfolk, VA		0.700	02/03	0.000		0.000			0.700	
Development Test & Evaluation	S/CPFF	NSWC Bethesda, MD		0.700	07/00	0.000		0.000			0.700	
Subtotal Support			0.000	8.000		0.000		0.000		0.000	8.000	

Remarks:

R-1 SHOPPING LIST - Item No. 51

CLASSIFICATION:

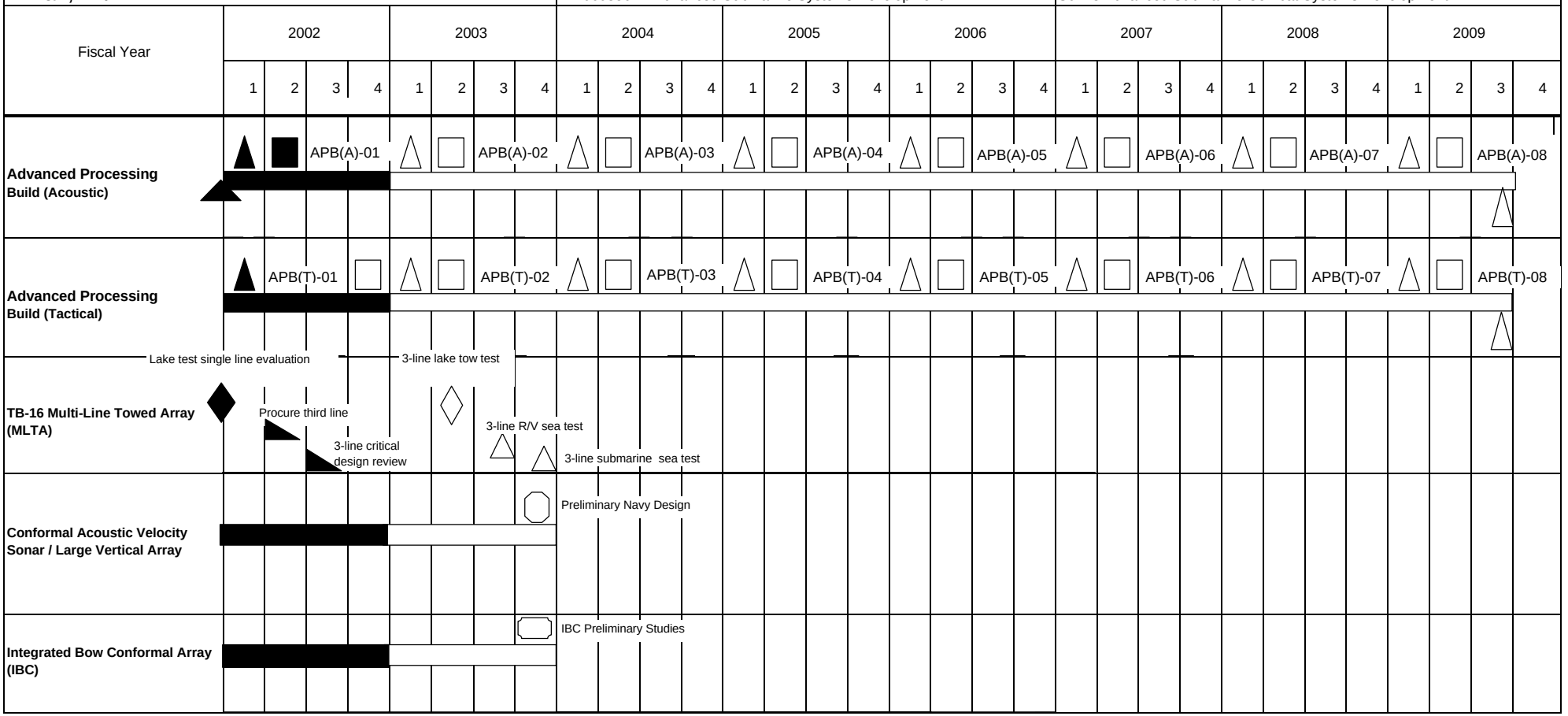
Exhibit R-3 Cost Analysis (page 3)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603561N/Advanced Submarine System Development			PROJECT NUMBER AND NAME S0223/Submarine Combat System Improv (Adv)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NUWC Newport, RI	0.750	0.758	10/02	0.000	10/03	2.000	10/04	CONT.	CONT.	
Developmental Test & Evaluation	Various	Various	2.011	0.000		0.000	12/03	4.281		CONT.	CONT.	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			2.761	0.758		0.000		6.281		0.000	9.800	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	C/CPFF	Integrated Product Dec, CT	0.450							CONT.	CONT.	
Program Management Support	C/CPFF	Stanley Associates, VA	2.999	1.389	12/02	1.000	12/03	1.000	12/04	CONT.	CONT.	
Program Management Support	Various	Various	0.200	0.844	12/02	0.844	12/03	0.844	12/04	CONT.	CONT.	
Program Management Support	Various	EG&G	1.787	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Program Management Support	Various	Anteon Corporation	0.198	0.000	-	0.000	-	0.000	-	CONT.	CONT.	
Travel			0.200	0.075		0.075		0.075		CONT.	CONT.	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			5.834	2.308		1.919		1.919		0.000	11.980	
Remarks:												
Total Cost			204.414	71.092		27.340		81.584		0.000	384.430	
Remarks:												

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: PE 0603561N Advanced Submarine Systems Development

PROJECT NUMBER AND NAME: S0223 Advanced Submarine Combat Systems Development



Legend:

△ Sea Test □ Transition ◇ Lake Test

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&E BA-4	PE 0603561N Advanced Submarine Systems Developmen				S0223 Advanced Submarine Combat Systems Development			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Processing Builds (Acoustic)								
APB(A)-01 Sea Test	1Q							
Transition APB-01 to ARCI	2Q							
APB(A)-02 Sea Test including HFSP		1Q						
Transition APB-02 to ARCI		2Q						
APB(A)-03 Sea Test			1Q					
Transition APB-03 to ARCI			2Q					
APB(A)-04 Sea Test				1Q				
Transition APB-04 to ARCI				2Q				
APB(A)-05 Sea Test					1Q			
Transition APB-05 to ARCI					2Q			
APB(A)-06 Sea Test						1Q		
Transition APB-06 to ARCI						2Q		
APB(A)-07 Sea Test							1Q	
Transition APB-07 to ARCI							2Q	
APB(A)-08 Sea Test								1Q
Transition APB-08 to ARCI								2Q
Advanced Processing Builds (Tactical)								
APB(T)-01: Sea Test. Transition to CCS	4Q							
APB(T)-02 Sea Test		1Q						
APB(T)-03 Sea Test			1Q					
APB(T)-04 Sea Test				1Q				
APB(T)-05 Sea Test					1Q			
APB(T)-06 Sea Test						1Q		
TB-16 Multi-Line Towed Array (MLTA)								
Lake test single line evaluation	1Q							
Procure third line	2Q							
Three-line critical design review	3Q							
Three-line lake tow test		2Q						
Three-line R/V sea test		3Q						
Three-line submarine sea test		4Q						
Large Vertical Array (LVA)								
LVA Studies	1Q-2Q							
Design and Component Test	1Q-4Q	1Q-4Q						
Preliminary Navy Design		4Q						
Integrated Bow Conformal Array (IBC)								
Requirements and Tradeoff Studies	1Q-4Q	1Q-4Q						
Quarter Scale Bow Dome Preparation	1Q-4Q							
Preliminary Studies		4Q						

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603562N/Submarine Tactical Warfare Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**9.120**	**13.075**	**6.027**	**6.350**	**7.062**	**10.387**	**10.489**	**10.775**
F0770/Advanced Sub. Spt Equipment	**3.266**	**4.253**	**3.431**	**3.692**	**3.764**	**4.519**	**4.623**	**4.707**
S9040/Multi-Line Towed Array	**3.903**	**1.731**						
S1739/Sub. Artic Warfare Development	**1.951**	**7.091**	**2.596**	**2.658**	**3.298**	**5.868**	**5.866**	**6.068**
Quality of RDT&E Articles								

Defense Emergency Response Funds (DERF) Funds: NOT APPLICABLE

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Tactical Warfare Systems program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP) and the Submarine Special Operations Support Program. The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D). Areas of improved operational effectiveness for Electronic Warfare Support (ES) and Imaging technologies include Threat Warning/Self Protection; Situational Awareness; and Intelligence, Surveillance, and Reconnaissance. A continuing need exists to improve these capabilities in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. The Submarine Arctic Warfare Development program responds to the increased threat of Naval activity in the Littorals and the continuing threat of submarine and surface ship activity in regions of the world through the development of advanced submarine R&D technology to provide improved operational capability in shallow water regions. Particular emphasis is placed in the areas of sonar operability and maintainability, Littoral operations, mine warfare, tactical surveillance, weapon utility and other submarine support missions. Efforts include assessment of combat system effectiveness, development of Arctic shallow water specific improvements for existing sonars and weapons, development of class specific Arctic operational guidelines and the testing of ice-capable submarine support structures. This program also provides the framework for various R&D programs to conduct Test and Evaluation in shallow water and Arctic regions.

R-1 SHOPPING LIST - Item No. 52

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603562N/Submarine Tactical Warfare System				PROJECT NUMBER AND NAME F0770/Advanced Submarine Support Equipment Program (ASSEP)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**3.266**	**4.253**	**3.431**	**3.692**	**3.764**	**4.519**	**4.623**	**4.707**
RDT&E Articles Qty								**0**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops submarine ES equipment and image processing technology. A continuing need exists to improve submarine capabilities 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: Active and passive Mast Signature Reduction (MSR), Low Probability of Intercept (LPI) Receiver, Single Mast Operations (Low Band DF Coverage), and ES Frequency Extension.

Situational Awareness sub-projects include: Automated Rangefinder, 360 degree (Remote control) Periscope, Submarine Common Imaging Workstation (SCIS), ES Vulnerability Server (EVS), Automatic Identification System (AIS), Photonics Mast Program Improvements (Digital Periscope- Cameras, Displays), and Imaging Technologies (super resolution, Multispectral fusion), and Communications Acquisition Direction Finding (CADF) LITE.

Intelligence, Surveillance and Reconnaissance sub-projects include: Imaging Enhancements, Submarine Offboard Sensors (UAV/UUV Pay Load), Modular Sensor System (Imaging/SIGINT modules), improved periscope interfaces (roller rings, digital low loss data conduit), and R.F. imaging.

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).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4	0603562N/Submarine Tactical Warfare Systems	F0770/Advanced Submarine Support Equipment Program (ASSEP)

B. Accomplishments/Planned Program Threat Warning / Self Protection

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.734			
RDT&E Articles Quantity				

Completed characterization of Radar Cross Section (RCS) for mast combinations, initiated electro-optic/infrared(EO/IR) mast signature characterization

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.238		
RDT&E Articles Quantity				

FY03 - Complete Mast Signature Reduction (MSR) electro-optic/infrared (EO/IR) mast signature characterization.
FY03 - Complete MSR RCS reduction over-water testing
FY03 - Initiate MSR wake reduction modeling and model tank testing
FY03 - Complete interface specification for Low Probability of Intercept (LPI) Receiver

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			0.466	0.597
RDT&E Articles Quantity				

FY04 - Complete MSR wake reduction model and techniques / materials investigation
FY04 - Complete ES frequency Extension performance specification
FY05 - Complete MSR RCS EDM IEM adapter model, testing, and evaluation
FY05 - Complete wake reduction EDM model mast, testing, and evaluation
FY05 - Complete LPI receiver Software and Land-based testing
FY05 - Complete contact award for Low Band DF coverage EDM

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603562N/Submarine Tactical Warfare Systems	F0770/Advanced Submarine Support Equipment Program (ASSEP)

B. Accomplishments/Planned Program (Cont.) Situational Awareness Enhancements

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.786			
RDT&E Articles Quantity				

· Integrated ES Vulnerability Server (EVS) EDM with AN/BLQ-10, initiated improvements in HMI and algorithms based on test results.
· Completed conceptual design and preliminary design review for Automated Rangefinder.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		3.214		
RDT&E Articles Quantity				

· FY03 - Complete design and fabrication of Automated Rangefinder EDM and temporary fleet installation
· FY03 - Complete concept definition and performance specification for 360 degree periscope
· FY03 - Complete EVS improvements and At Sea testing of the EDM unit in an AN/BLQ-10 System and transition to production.
· FY03 - Complete Concept definition for Image Processing Improvements

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			1.834	1.458
RDT&E Articles Quantity				

· FY04 - Complete At-Sea demonstration, system engineering, production engineering, and evaluation of Automated Rangefinder FDM
· FY04 - Complete performance specification for Submarine Common Imaging Workstation (SCIS)
· FY04 - Complete performance specification for Image Processing Improvements
· FY05 - Manufacture, Install, and Test Automated Rangefinder Pre-production models in the fleet
· FY05 - Complete contract award for 360 degree periscope EDM manufacture and evaluation
· FY05 - Complete contract award and manufacture of EDM for image processing improvements

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /	0603562N/Submarine Tactical Warfare Systems	F0770/Advanced Submarine Support Equipment Program (ASSEP)

B. Accomplishments/Planned Program (Cont.) Intelligence, Surveillance, and Reconnaissance Enhancements

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.746			
RDT&E Articles Quantity				

· Integrated Passive Surveillance Radar (PSR) EDM with AN/BLQ-10, incorporated improvements, prepared for additional At-Sea Testing

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.801		
RDT&E Articles Quantity				

· FY03 - Complete concept definition for submarine offboard sensors (UAV/UUV payload)
· FY03 - Incorporate imaging enhancements completed to date into an advanced build and evaluate at-sea

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			1.131	1.637
RDT&E Articles Quantity				

· FY04 - Incorporate imaging enhancements completed to date into an advanced build and evaluate at-sea
· FY04 - Complete performance specification for submarine offboard sensors
· FY04 - Complete concept definition for modular sensor system
· FY04 - Complete interface specification and interface of CADF Lite system to the AN/BLQ-10
· FY05 - Complete contract award for manufacture of submarine sensors offboard sensors EDM
· FY05 - Complete first Advanced processor build delivery for CADF Lite

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603562N/Submarine Tactical Warfare Systems	F0770/Advanced Submarine Support Equipment Program (ASSEP)

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	3.328	4.350	4.490	4.517
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	3.266	4.253	3.431	3.692
Total Adjustments	-0.062	-0.097	-1.059	-0.825
Summary of Adjustments				
Section 8123: Management Reform	0.029			
Post Production R&D Continuation	0.007			
Economic Assumption	0.009			
FY 02 Actuals (30 SEPT)	0.017			
Congressional program reductions	0.000	0.000	0.000	0.000
Congressional undistributed reductions	0.000	0.000	0.000	0.000
Congressional rescissions	0.000	0.000	0.000	0.000
SBIR/STTR Transfer	0.000	0.000	0.000	0.000
NWCF RATES	0.000	0.000	0.000	0.003
Inflation index reduction	0.000	0.072	0.078	0.000
Navy FMB Undistributed Reductions	0.024	0.025	0.981	0.822
Subtotal	0.062	0.097	1.059	0.825

Schedule:

Addition of Ice Camp in FY03.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603562N/Submarine Tactical Warfare Systems	F0770/Advanced Submarine Support Equipment Program (ASSEP)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

(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)

E. ACQUISITION STRATEGY: *

This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letter, Serial N77/1U651534, dated 30 Oct 01, COMSUBLANT/COMSUBPAC Command Capability Issues (CCIs), Virginia Class SSN Operational Requirements Document objectives, a review, assessment and prioritization of Sensor and Processor efforts and SSN force level projections for SSN688/688I 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.

F. MAJOR PERFORMERS: **

John Hopkins University, Applied Physics Laboratory, Laurel, MD - Completed development of Electronic Vulnerability Server (EVS) EDM
Syracuse Research Corporation, Syracuse, NY - Completed development and manufacture of Passive Surveillance Radar (PSR) EDM.
NAWC, China Lake, CA - Completed conceptual and preliminary design of automated range finder
NUWC, Newport, RI - Completed characterization of radar cross section (RCS) for mast combinations
LMC, Syracuse - Completed integration of EVS and PSR EDMs into AN/BLQ-10 baseline software and the PSR controller software

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems				PROJECT NUMBER AND NAME F0770/Advanced Submarine Support Equipment Program (ASSEP)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPIF	BAE/Argon/LMC/KEO	0.000	0.920	10/02	1.020	10/03	1.220	10/04	TBD	TBD	TBD
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	NUWC Newport, RI	10.563	1.065	10/02	0.898	10/03	0.852	10/04	CONT	CONT	N/A
	WR/RC	NAWC China Lake	11.887	1.200	10/02	0.200	10/03	0.080	10/04	CONT	CONT	N/A
Licenses											0.000	
GFE	N/A	N/A									0.000	
Miscellaneous	Various	Various	10.665	0.478	Various	0.701	Various	0.905	Various	CONT	CONT	N/A
Award Fees											0.000	
Subtotal Product Development			33.115	3.663		2.819		3.057		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Engineering Technical Services	C/CPFF	AT&T GSI, Vienna,VA	9.363	0.200	11/02	0.288	11/02	0.290	10/02	CONT	CONT	N//A
GFE											0.000	
Award Fees											0.000	
Subtotal Support			9.363	0.200		0.288		0.290		CONT	CONT	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems			PROJECT NUMBER AND NAME F0770/Advanced Submarine Support Equipment Program (ASSEP)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Management Support Survices	C/CPFF	Various	1.484							CONT	CONT	N/A
Travel	TOs	Various	0.166	0.050		0.050		0.050		0.000	0.316	
Labor (Research Personnel)											0.000	
SBIR Assessment				0.340		0.274		0.295		CONT	CONT	
Subtotal Management			1.650	0.390		0.324		0.345		0.000	CONT	
Remarks:												
Total Cost			44.128	4.253		3.431		3.692		CONT	CONT	
Remarks:												

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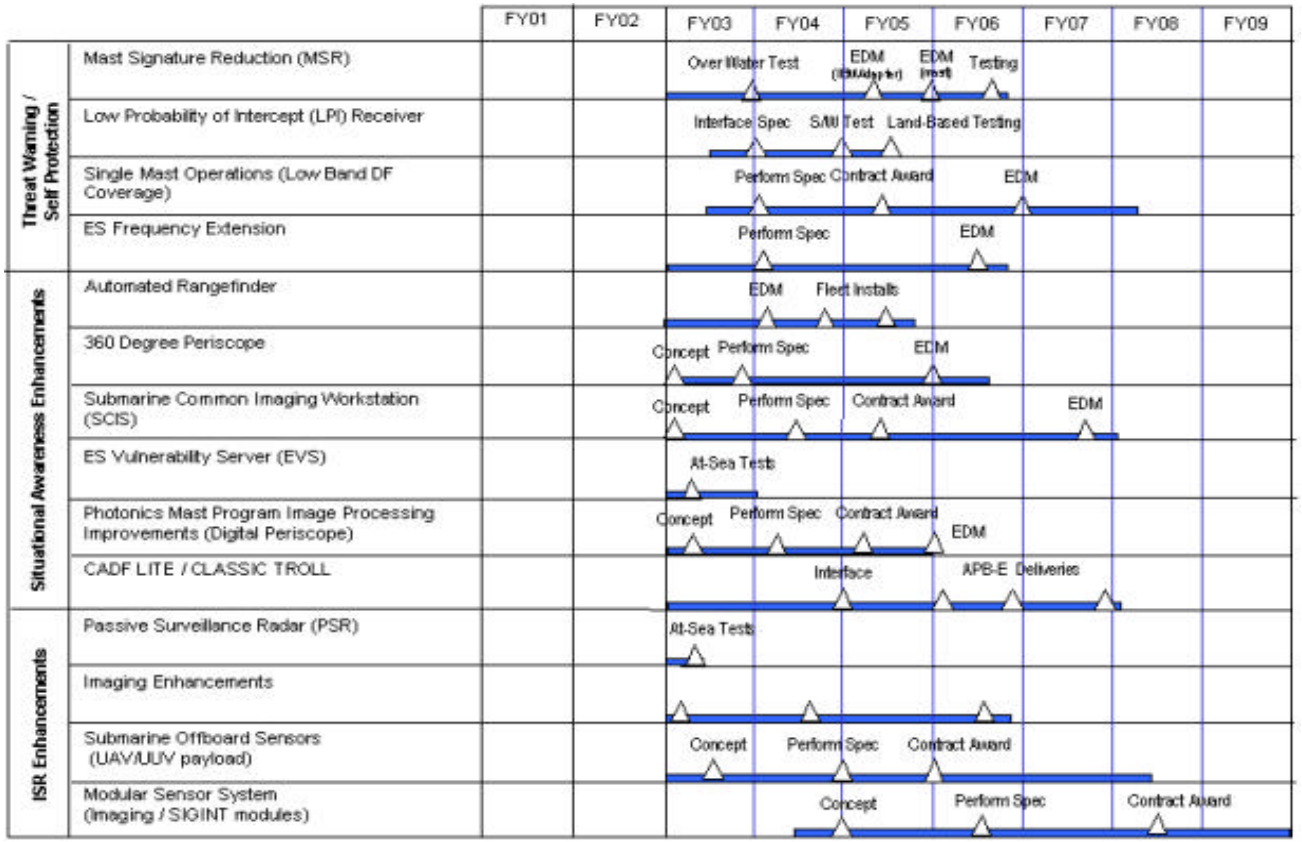
EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-4	**0603562N/Submarine Tactical Warfare System**	F0770/Advanced Submarine Support Equipment Program (ASSEP)



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-04**	PROGRAM ELEMENT 0603562N/Submarine Tactical Warfare Systems				PROJECT NUMBER AND NAME F0770/Advanced Submarine Support Equip Prog (ASSEP)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Threat Warning / Self Protection								
MSR Over Water Testing		Q4						
LPI Receiver Interface Specification		Q4						
Low Band DF & ES Freq Extend PerfSpec			Q1					
LPI Receiver Software Test			Q4					
MSR IEM Adapter EDM / Low Band DF EDM Contract Award				Q2				
LPI Receiver Land Based Testing				Q2 - Q3				
MSR Mast EDM				Q4				
MSR Test and Evaluation					Q1 - Q3			
Low Band DF EDM					Q4			
Situational Awareness Enhancements								
Automated Rangefinder Performance Specification	Q2							
EVS EDM	Q3							
360 Degree Periscope Concept / SCIS Concept		Q1						
Image Processing Improvements Concept		Q2						
EVS At-Sea Testing and Evaluation		Q3,Q4						
360 Degree Periscope Performance Specification		Q4						
Automated Rangefinder EDM			Q1					
Image Processing Improvements Performance Specification			Q2					
SCIS Performance Specification		Q3						
Automated Rangefinder Fleet Install and Evaluation		Q3,Q4						
CADF LITE Interface			Q4					
SCIS EDM Contract Award				Q2				
Image Processing Improvements EDM Contract Award				Q4				
CADF LITE APB Deliveries					Q1 - Q4	Q4		
Intelligence, Surveillance, Reconnaissance Enhancements								
PSR EDM Test and Integration	Q2-Q4	Q1						
PSR At Sea Tests	Q4	Q2, Q3						
Imaging Enhancements APB		Q2	Q4	Q4				
Submarine Offboard Sensors Concept		Q3						
Submarine Offboard Sensors Performance Specification			Q3					
Submarine Offboard Sensors EDM Contract Award				Q4				
Modular Sensor System Concept			Q4					
Modular Sensor System Performance Specification					Q3			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603562N Submarine Tactical Warfare System				PROJECT NUMBER AND NAME S1739 Submarine Special Operations Support			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.951**	**7.091**	**2.596**	**2.658**	**3.298**	**5.868**	**5.866**	**6.068**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Artic project responds to the increased threat of Naval activity in the Littoral and continuing threat of submarine and surface ship activity in all regions of the world 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.

Project S9040 is authorized by Congress to develop Fiber Optics Multi-Line Towed Array.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603562N Submarine Tactical Warfare System	S1739 Submarine Special Operations Support

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.951	7.091	2.596	2.658
RDT&E Articles Quantity				

Conducted and Supported Ice Exercise and ICEOPS operations. Prep for FY03 Ice Camp. Developed database of Arctic operations surfacing data. Initiated Structural Analysis of VIRGINIA Class Sail.
FY 2003 - 2005 Plans
Provide planning, logistics, construction support for Ice Camp Operations (ICEX 1-03) and conduct training to improve Arctic divers proficiency (CEX 1-03). Conduct support FY05 ICEX and ICEOPS operations.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603562N Submarine Tactical Warfare System	S1739 Submarine Special Operations Support

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	2.077	7.251	2.273	2.301
FY04/05 Congressional Controls	1.951	7.091	2.596	2.658
Total Adjustments	-0.126	-0.160	0.323	0.357
Summary of Adjustments				
Issue 28110 Shortfall			0.485	0.522
Section 8123 Management Refo	-0.018			
SBIR/STTR Transfer	-0.052			
Section 313, PL 107-206: Revised	-0.001			
Naval Working Capitol Funding Naval Surface Warfare			-0.003	-0.003
FY02 BTR (July-02)	-0.040			
Business Process Reform		-0.029		
Economic Assumptions (Sec. 813	-0.005	-0.041		
IT Cost Growth (Sec. 8109)		-0.013		
Overhead and Direct Cost Reduc			-0.041	-0.042
Ftprint Reduction-Mothballes/S			-0.004	-0.004
Single Site Common Support (NS			-0.006	-0.006
Reduction in Support Contracto			-0.046	-0.055
Examine 'Non-Core' Competencie			-0.002	-0.002
FY02 Actuals (30-Sept)	-0.010			
NSWC PBD 426			-0.001	
Naval Working Capitol Funding Rates - R&D Fuel			0.003	0.004
Inflation Savings		-0.077		
PBD-604 Nonpay Purchase Infl			-0.048	
PBD-604 Nonpay Inflation			-0.014	
PBD-604: FY05/09 Inflation				-0.057
Subtotal	-0.126	-0.160	0.323	0.357

Schedule:

N/A

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	PE 0603562N Submarine Tactical Warfare System	S1739 Submarine Special Operations Support

D. OTHER PROGRAM FUNDING SUMMARY: N/A

E. ACQUISITION STRATEGY: *

NON-ACAT Progam

F. MAJOR PERFORMERS: **

Command Submarine ForceUS PacificFleet (COMSUBPAC) - Develop and definitize an Arctic-Deploying side Scan Sonar replacement plan, which will deliver a significant improved qualitative view of the underside of the ICE Canopy Sighting and tracking surfaceable features of current submarines, and the future VA Class submarine.
Applied Physics Laboratory /University of Washington (APL/UW) - Conduct Ice Camp planning

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA4**			PROGRAM ELEMENT PE 0603562N Submarine Tactical Warfare System			PROJECT NUMBER AND NAME S1739 Submarine Special Operations Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering	WR	NSWC Carderock	0.200	0.200	11/02	0.200	11/02	0.200	11/02		0.800	
Systems Engineering		EB Corp	0.025								0.025	
Systems Engineering	WR	NSWC INDIAN HEAD	0.051								0.051	
Systems Engineering	WR	SPAWAR	0.070	0.050	11/02	0.050	11/01	0.050	11/01		0.220	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal Product Development			0.346	0.250		0.250		0.250		0.000	1.096	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA**		PROGRAM ELEMENT PE 0603562N Submarine Tactical Warfare System			PROJECT NUMBER AND NAME S1739 Submarine Special Operations Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVRON Five	4.768	3.610	11/02	2.086	11/03	2.148	11/04		12.612	
Developmental Test & Evaluation	WR		0.015								0.015	
Developmental Test & Evaluation	WR	CMDR,3rd NAVCON BRIGA	0.200								0.200	
Developmental Test & Evaluation	WR	CMDR,2nd NAVCON BRIGA	0.100	0.150	11/02	0.150	11/03	0.150	11/04		0.550	
Developmental Test & Evaluation	SS/CPFF	APL/University of Washingto	0.294	3.000	11/02						3.294	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			5.377	6.760		2.236		2.298		0.000	16.671	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support			0.308	0.071	11/02	0.100	11/03	0.100	11/04		0.579	
Travel			0.030	0.010	11/02	0.010	11/03	0.010	11/04		0.060	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.338	0.081		0.110		0.110		0.000	0.639	
Remarks:												
Total Cost			6.061	7.091		2.596		2.658		0.000	18.406	
Remarks:												

R-1 SHOPPING LIST - Item No. 52

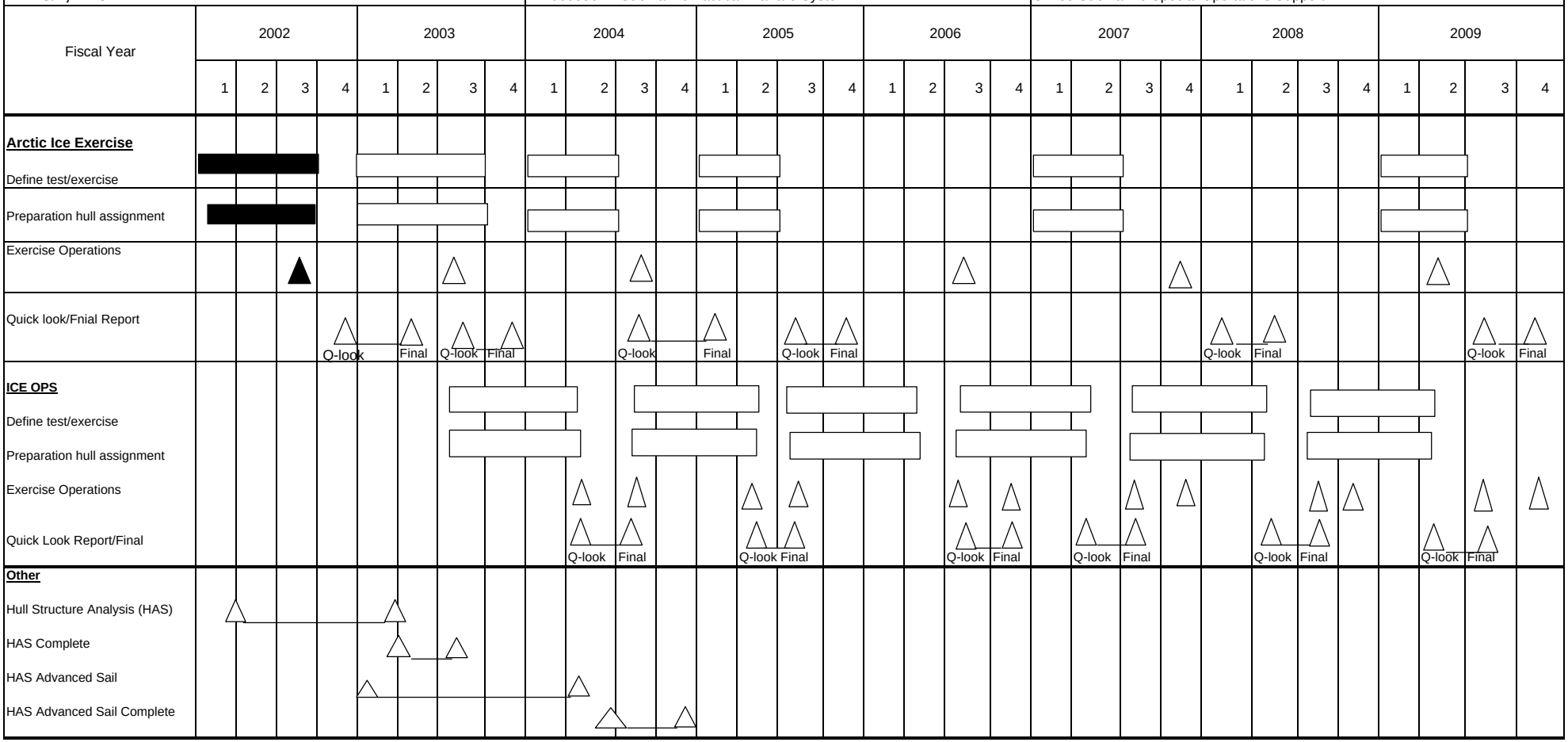
CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA4**

PROGRAM ELEMENT NUMBER AND NAME: PE 0603562N Submarine Tactical Warfare System

PROJECT NUMBER AND NAME: S1739 Submarine Special Operations Support



R-1 SHOPPING LIST - Item No. 52

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA4**	PROGRAM ELEMENT PE 0603562N Submarine Tactical Warfare System				PROJECT NUMBER AND NAME S1739 Submarine Special Operations Support			
Schedule Profile -	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Artic Ice Exercise								
Define test/exercise, objectives and experiments	1Q-3Q	1Q-2Q	1Q-2Q			12Q		1Q-2Q
Preparations hull assignments	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q		1Q-3Q		1Q-3Q
Exercise Operations	3Q	3Q	3Q	3Q	3Q	4Q		2Q
Quick look final report	4Q	2Q-4Q	3Q-4Q	3Q-4Q			1Q-2Q	3Q-4Q
ICE OPS								
Define test/exercise, objectives and experiments		4Q	1Q-2Q,4Q	1Q-2Q	3Q-4Q	3Q-4Q	3Q-4Q	1Q-2Q
Preparations hull assignments		4Q	1Q-2Q,4Q	1Q-2Q	3Q-4Q	3Q-4Q	3Q-4Q	1Q-2Q
Exercise Operations			12Q-4Q	12Q-4Q	1Q,3Q-4Q	1Q, 3Q-4Q	1Q, 3Q-4Q	1Q, 3Q-4Q
Quick look final report			2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q
Other			1Q					
Hull Structure Analysis VA	2Q-4Q	1Q-2Q						
Hull Structure Analysis VA complete		2Q-3Q						
Hull Structure Analysis for VA Advanced Sail		1Q-4Q	1Q-2Q					
Hull Structure Analysis for VA Advanced Sail Complete			3Q-4Q					

R-1 SHOPPING LIST - Item No. 52

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**22.437**	**25.102**	**7.679**	**7.545**	**1.784**	**1.762**	**1.769**	**1.793**
S2196/Design Tools, Plans & Concepts	**4.068**	**5.691**	**7.679**	**7.545**	**1.784**	**1.762**	**1.769**	**1.793**
S9041/Small Combatant Craft	**8.165**	**7.823**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9042/Sealion Tech Demo	**0.966**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9043/Metallic Materials Adv Dev & Certification	**3.323**	**3.325**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9044/DocumentAutomation Of ICAS Maint	**2.514**	**2.494**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9045/Planning and Design LHD-Type Ship	**3.401**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9192/Autonomous Maritime Navigation	**0.000**	**1.467**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9194/Adv Integ Low-Profile Antenna (HF,VHF,UHF)	**0.000**	**2.348**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S9195/Advanced Stealth Ship Radars	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Defense Emergency Response Funds (DERF) Funds: Not Applicable.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification:

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.

(U) Project S2196 - 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.

(U) Project S9041 - Congressional add. 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. This was a Congressional add project in FY 2000 and FY 2001 in a different PE.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design

(U) Project S9042 - Congressional add. This project funds Situation Awareness Module, related to the Sealion Craft (project S9041).

(U) Project S9043 - Congressional add. This project funds the Metallic Material Advanced Development and Certification Program.

(U) Project S9044 - Congressional add. This project funds Documentation Automation of Integrated Condition Assessment System (ICAS) Maintenance and other Navy prcedures in XML format.

(U) Project S9045 - Congressional add. This project funds Planning and Design of LHD-type ship.

(U) Project S9192 - Congressional add. This project funds development of autonomous operation technologies in maritime vehicles and their payloads.

(U) Project S9194 - Congressional add. This project funds design and test construction of conformal antennas related to SEALION craft (project S0941).

(U) Project S9195 - Congressional add. This project funds adaptive design and test construction of low probability of intercept (LP1) radar, related to SEALION craft (project S0941).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603563N/ship Concept Advanced Design				PROJECT NUMBER AND NAME S2196/Design Tools, Plans, and Concepts			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**4.068**	**5.691**	**7.679**	**7.545**	**1.784**	**1.762**	**1.769**	**1.793**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 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.

(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.

(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.

(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 effectivenes 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.

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603563N/Ship Concept Advanced Design	S2196/Design Tools, Plans, and Concepts

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.504	0.744	0.502	0.811
RDT&E Articles Quantity				

(U) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, configuration, capabilities and rough order of magnitude (ROM) ship costs. Conduct pre-Milestone A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess the future ship concepts as part of potential future fleet architecture concepts.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.189	0.261	0.000	0.000
RDT&E Articles Quantity				

(U) Total Ship Technology Assessment: Analyzed the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identified characterize and assess new and emergent technologies. Developed methodologies for assessment of benefits and imapcts of technologies in total ship concepts. Supported development of total ship and HM&E technology roadmaps.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.175	1.066	0.848	1.196
RDT&E Articles Quantity				

(U) Ship Concept Design and Engineering Tools, Methods, and Criteria. Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the US Navy's Advanced Surface Ship Evaluation Tool (ASSET) surface ship synthesis/assessment models in the following areas: improve performance assessment capabilities, update and enhance capabilities to handle new ship configurations, hull form alternatives, signature reduction features, characterize advanced machinery technologies, address optimal required shipboard manning, reduced total ownership cost , and increased capabilities to determine ship size impacts of new technologies including warfare systems. Improve interoperability of Navy and shipbuilder design systems.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603563N/Ship Concept Advanced Design	S2196/Design Tools, Plans, and Concepts

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.810	3.115	5.538
RDT&E Articles Quantity				

(U) Future Force Formulation (Core): Continue development of methodology for force architecture alternatives and analysis. Conduct analysis of force architecture concepts that can illuminate the high level interfaces between surface ship warfare communities and other force elements such as aviation and submarines. Examine the distribution of functions between various existing and postulated ship classes, the interface between diverse force elements such as platform configuration and mission, network connectivity, force level logistics and concept of operations, with a particular focus on total force level cost, performance and risk.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.810	3.214	0.000
RDT&E Articles Quantity				

(U) Future Force Formulation (Demo): Conduct first Future Force Formulation case study, selecting a limited case of force architecture for practical execution and feedback into the process development. Selection of a family of ships within a community will be made and the developing methodology of Future Force Formulation exercised in a one year study with deliverables and for presentation before decision authority for a pre-MS A project.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.200	0.000	0.000	0.000
RDT&E Articles Quantity				

(U) This task funds requirement development for ship and technologies to counter such threatrs as part of a netted distributed family of ships that will project power forward and enable naval and joint task force commander to dominate the littoral battlespace. The transformation of the surface Combatant Fleet starts with Highly capable, multi-mission Sestroyers, advanced Cruisers and a new breed of focused mission ships designed to defeat enemy littoral defenses including mines, small boats, and submarines, ultimately ensuring maritime access in any environment. This study focuses on requirements for a ship with the newest generation hull form and tailored, modularized combat systems package designs to accomodate: small boats, Littoral mine countermeasures and Littoral ASW.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **Febraury 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603563N/Ship Concept Advanced Design	S2196/Design Tools, Plans, and Concepts

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 03 Pres Controls):	1.932	5.820	8.054	7.909
Current BES/President's Budget: (FY04 President Controls Controls)	4.068	5.691	7.679	7.545
Total Adjustments	2.136	-0.129	-0.375	-0.364
Summary of Adjustments				
FY 02 Actuals (30-Sept)	2.185	0.000	0.000	0.000
FY05/09 Inflation adjustments	0.000	0.000	0.000	-0.163
Reduction in Support Contractors	0.000	0.000	0.000	-0.102
Nonpay Inflation Adjustments	0.000	0.000	-0.136	0.000
Minor adjustments	-0.049	-0.129	-0.239	-0.099
Subtotal	2.136	-0.129	-0.375	-0.364

Schedule:

Not Applicable.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603563N/Ship Concept Advanced Design	S2196/Design Tools, Plans, and Concepts

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

(U) Related RDT&E
(U) PE 0603512N (Carrier Systems Development)
(U) PE 0603513N (Shipboard Systems Component Development)
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)
(U) PE 0604300N (SC21 Total Ship Systems Engineering)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

E. ACQUISITION STRATEGY: *

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments.

F. MAJOR PERFORMERS: **

List major contractors, universities, colleges, government facilities, federally funded research and development centers, laboratories, center, or other organizations contributing to this effort through BY2 (FY 2005). Only list those who were primary recipients of funds (e.g., received 15% or over $10 million, whichever is less). Include name or titles, locations and brief description of work performed. Include actual or projected award date (month/year).

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design			PROJECT NUMBER AND NAME S2196/Design Tools, Plans, and Concepts						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Systems Engineering	various	Other Various Contractors	55.097	0.953	various	2.397	various	2.387	various		60.834	
Engineering Developemnt	WR	NAVSEA, Dahlgren Div,		1.525	various	1.908	various	1.875	various		5.308	
		Dahlgren, VA									0.000	
											0.000	
Demonstration & Evaluation	WR	NAVSEA, Carderock Div,	29.958	2.382	various	1.908	various	2.005	various		36.253	
		West Bethesda, MD									0.000	
Licenses											0.000	
Tooling	WR & RC	Other Govt. Activities	8.828	0.816	various	1.446	various	1.258	various		12.348	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			93.883	5.676		7.659		7.525		0.000	114.743	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design			PROJECT NUMBER AND NAME S2196/Design Tools, Plans, and Concepts							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.015		0.020		0.020			0.055	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.015		0.020		0.020		0.000	0.055	
Remarks:												
Total Cost			93.883	5.691		7.679		7.545		0.000	114.798	
Remarks:												

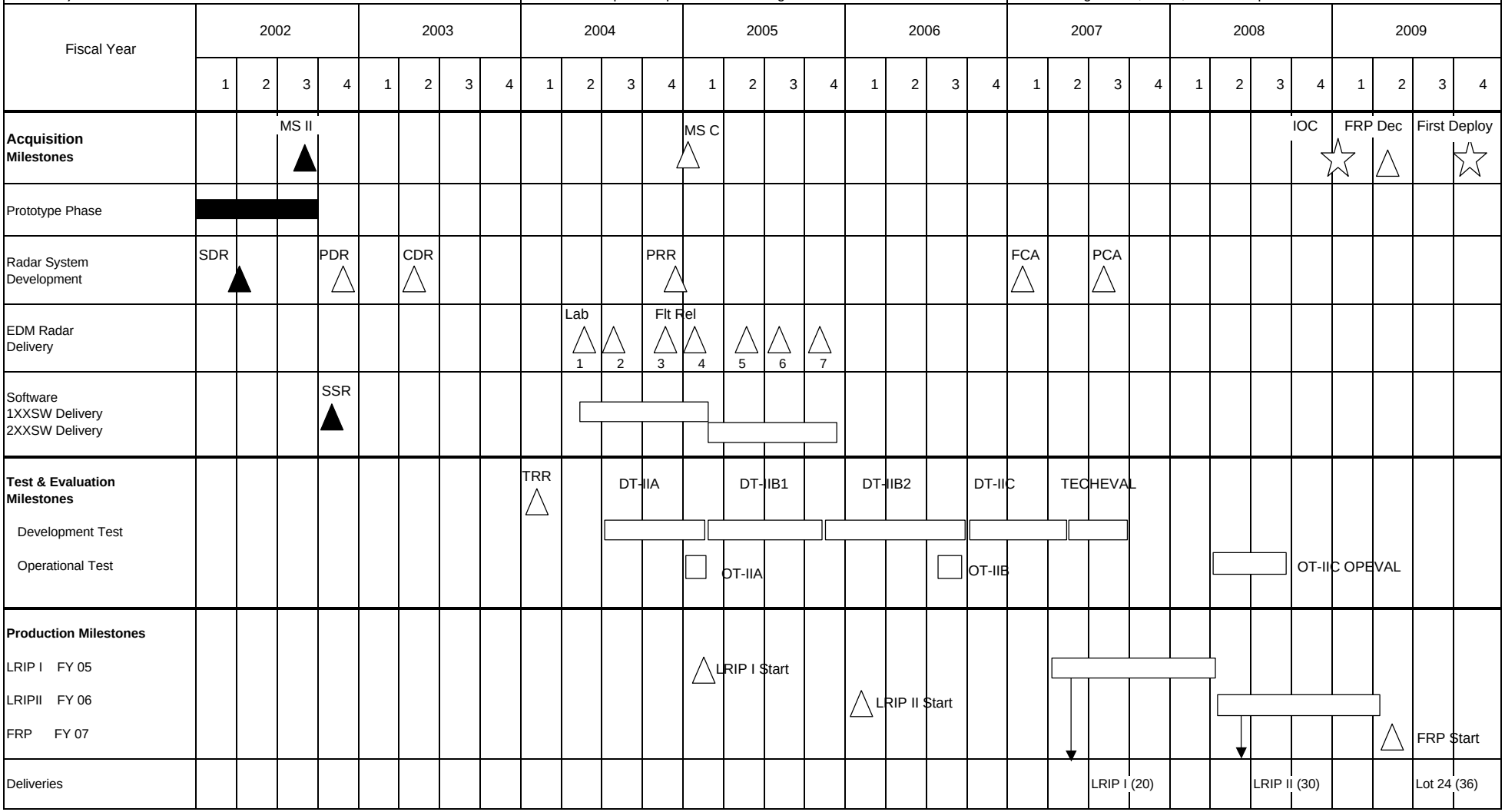
CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603563N/Ship Concept Advanced Design

PROJECT NUMBER AND NAME: S2196/Design Tools, Plans, and Concepts



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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603563N/Ship Concept Advanced Design				PROJECT NUMBER AND NAME S2196/Design Tools, Plans, and Concepts			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase	1Q-3Q							
System Design Review (SDR)	2Q							
Milestone II (MSII)	3Q							
Contract Preparation	3Q							
Software Specification Review (SSR)	4Q							
Preliminary Design Review (PDR)	4Q							
System Development		1Q-2Q						
Critical Design Review (CDR)		2Q						
Quality Design and Build		3Q-4Q	1Q-4Q					
Test Readiness Review (TRR)			1Q					
Developmental Testing (DT-IIA)			3Q-4Q	1Q				
Eng Dev Model (EDM) Radar Delivery - Lab			2Q-3Q					
Software Delivery 1XXSW			2Q-4Q	1Q				
Preproduction Readiness Review (PRR)			4Q					
EDM Radar Delivery - Flt Related			4Q	1Q-4Q				
Milestone C (MS C)				1Q				
Operational Testing (OT-IIA)				1Q				
Start Low-Rate Initial Production I (LRIP I)				2Q				
Software Delivery 2XXSW				1Q-4Q				
Developmental Testing (DT-IIB1)				1Q-4Q				
Developmental Testing (DT-IIB2)				4Q	1Q-3Q			
Start Low-Rate Initial Production II					1Q			
Operational Testing (OT-IIB)					3Q	1Q-2Q		
Developmental Testing (DT-IIC)					4Q	1Q-2Q		
Functional Configuration Audit (FCA)						1Q		
Low-Rate Initial Production I Delivery						2Q-4Q	1Q-2Q	
Technical Evaluation (TECHEVAL)						2Q-3Q		
Physical Configuration Audit						3Q		
Operational Evaluation (OT-IIC) (OPEVAL)							2Q-3Q	
Low-Rate Initail Production II Delivery							2Q-4Q	1Q-2Q
IOC								1Q
Full Rate Production (FRP) Decision								2Q
Full Rate Production Start								2Q
First Deployment								4Q

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603564N/Ship Preliminary Design and Feasibility Studies			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**12.478**	**6.840**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
33096/Littoral Combat Ship	**0.000**	**3.934**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S0408/Ship Development (Adv)	**12.478**	**2.906**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Defense Emergency Response Funds (DERF) Funds: None

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603564N/Ship Preliminary Design and Feasibility Studies				PROJECT NUMBER AND NAME S0408/Ship Development (Adv)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**12.478**	**2.906**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification. 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). These studies may also include operational measurements and trials on experimental ships, such as the High Speed Vessel (HSV), to insure ship technologies are applicable to future US Navy Ships. 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603564N/Ship Preliminary Design and Feasibility Studie	S0408/Ship Developemnt (Adv)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	7.865	0.000	0.000	0.000
RDT&E Articles Quantity				

(U) Continued and completed JCC(X) Feasibility Studies, ORD development and mission package and host platform definition. Funded limited industry participation in JCC(X) requirements development process. Prepared documentation required for a Program Initiation decision.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.613	0.000	0.000	0.000
RDT&E Articles Quantity				

(U) Continued and completed LHA Replacement Feasibility Studies. Prepared documentation required for a Program Initiation decision.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.906	0.000	0.000
RDT&E Articles Quantity				

(U) Payment for lease for the HSV test ship.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603564N/Ship Preliminary Design and Feasibility Studie	S0408/Ship Developemnt (Adv)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

(U) Conduct and perform engineering support for design review, technical evaluation and source selection, constuction, delivery and modification of HSV to insure the correct product is delivered and to assess technology applications to other current and future ship acquisitions. Conduct classification society rule review and validation to increase confidence in the use on this ship, as well as other current and future ship acquisitions.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603564N/Ship Preliminary Design and Feasibility Studies	S0408/Ship Development (Adv)

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 03 Pres Controls) :	14.748	2.983	4.975	10.921
Current BES/President's Budget: (FY04 President Controls)	12.478	2.906	0.000	0.000
Total Adjustments	-2.270	-0.077	-4.975	-10.921
Summary of Adjustments				
Reprogrammings	-1.500		15.700	11.000
FY2002 SBIR (dtd 5-15-02)	-0.336			
FY 02 Actuals (30-Sept)	-0.363			
Minor Adjustments	-0.071	-0.077		
Realign HSV Lease Funding			-20.675	-21.921
Subtotal	-2.270	-0.077	-4.975	-10.921

Schedule:

Not Applicable.

Technical:

INot Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603564N/Ship Preliminary Design and Feasibility Studies	S0408/Ship Development (Adv)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
(U) PE 0603563N (Ship Concept Advanced Design)										
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)										

E. ACQUISITION STRATEGY: *

This is a non acquisition program that supports pre-milestone 1 efforts for potential ship acquisition programs.

F. MAJOR PERFORMERS: **

Naval Surface Warfare Center at Carderock, Maryland - Perform engineering review services, operational monitoring and trials, classification society rules review and validation - October 2002

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603564N/Ship Preliminary Design and Feasibility Studies			PROJECT NUMBER AND NAME S0408/Ship Development (Adv)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
											0.000	
Systems Engineering	WR	NSWC Dahlgren, VA	12.072								12.072	
	WR	NSWC Carderock, MD	8.703	0.836							9.539	
	WR	NSWC Panama City	1.300								1.300	
	WR	NAVAIR	1.100								1.100	
	PD	SPAWAR	10.351								10.351	
	WR/Reqn	Other Government	11.588								11.588	
	C/CPFF	Nichols Adv Marine, VA	15.380								15.380	
	Comp	J.J. McMullen, VA	6.184								6.184	
	Various	Other Contractor	32.469								32.469	
											0.000	
Subtotal Product Development			99.147	0.836		0.000		0.000		0.000	99.983	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603564N/Ship Preliminary Design and Feasibility Studies				PROJECT NUMBER AND NAME S0408/Ship Development (Adv)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation	WR	NSWC Carderock, MD	0.000	2.070							2.070	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	2.070		0.000		0.000		0.000	2.070	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel			0.025								0.025	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.025	0.000		0.000		0.000		0.000	0.025	
Remarks:												
Total Cost			99.172	2.906		0.000		0.000		0.000	102.078	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																													DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603564N/Ship Preliminary Design and Feasibility Studies														PROJECT NUMBER AND NAME S0408/Ship Development (Adv)											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestones		HSV Contract Award △				HSV Delivery △																										
Engineering Support					▭	▭	▭	▭																								
Test & Evaluation																																
Operational Test							▭	▭																								
Production Milestones																																

R-1 SHOPPING LIST - Item No. 54 - 9 of 54 - 16

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-??**	PROGRAM ELEMENT 0603564N/Ship Preliminary Design and Feasibility Studies				PROJECT NUMBER AND NAME S0408/Ship Development (Adv)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
HSV Contract Award Milestone		1Q						
HSV Delivery Milestone		3Q						
HSV Engineering Support		1Q-4Q						
HSV Operational Testing		2Q-4Q						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603564N/Ship Preliminary Design and Feasibility Studies				PROJECT NUMBER AND NAME 33096 - Littoral Combat Ship Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.000**	**3.934**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project performs studies and analysis to address requirements for a future Navy focus mission, high speed ship. Included in this project is Analysis of Alternatives (AOA) studies and other engineering efforts to perform impact studies of warfare, hull, mechnical and electrical subsystems on advanced high speed ship designs. Also included is evaluation of advanced and alternative technologies and high speed ship concepts to assess their suitability in littoral environment. Products include initial requirements 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; including Operational Requirements Document (ORD) and other documentation required at Program Initiation.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603564N/Preliminary Design and Feasibility Studies	33096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.656	0.000	0.000
RDT&E Articles Quantity				

Begin implementation of Technical Team responsible for providing expertise to evaluate/support high spped studies in the area of combat systems, HM&E, C4ISR, and test and evaluation. The team consists of Government warfare centers, laboratories, universities and selected technical support contractors. This team will provide the engineering expertise to evaluate/support the industry-developed concepts and technology demonstrations of new system concepts and mission systems in order to reduce risk on components and subsystems. Begin development of test and evaluation master plan (TEMP).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.278	0.000	0.000
RDT&E Articles Quantity				

Begin Analysis of Alternatives (AOA). Develop operational context in which LCS will operate. This will include parametric studies, operational concept and missions, Threat Assessment, SHip Concept Alternatives, and Cost and Manning Analysis and development of Operational Requirements Document (ORD),

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603564N - Ship Preliminary Design and Feasibility Studies	33096 - LCS Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 03 Pres Controls):	0.000	0.000	0.000	0.000
Current BES/President's Budget: (FY04 President Controls)	0.000	3.934	0.000	0.000
Total Adjustments	0.000	3.934	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumtions				
Reprogrammings		3.934		
Subtotal	0.000	3.934	0.000	0.000

Schedule:

See individual projects

Technical: TBD

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603564N - Ship Preliminary Design and Feasibility Studie	33096 - LCS Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
BLI 160000 (OPN)	0.000	0.000	0.000	0.000	0.000	0.000	360.000	830.000	CONT	CONT
BLI 212700 (SCN)	0.000	0.000	0.000	0.000	0.000	0.000	440.000	880.000		
0603561N	0.000	0.000	163.000	185.000	420.000	410.000	150.000	0.000		

E. ACQUISITION STRATEGY:

(U)The LCS acquisition strategy encompasses four phases: Phase I – Concept and Technology Development. Phase II - System Development and Demonstration. Phase III - Production and Deployment, Phase IV - Operations and Support

F. MAJOR PERFORMERS:

TBD.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603564N/Preliminary Design and Feasibility Studies			PROJECT NUMBER AND NAME 33096 - LCS Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development												
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603564N/Ship Preliminary Design and Feasibility Studies			PROJECT NUMBER AND NAME 33096 - LCS Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Developmental Test & Evaluation												
Developmental Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E												
Remarks:												
Contractor Engineering Support	GSA	ANTEON, Arlington, VA	0.000	0.978	1QFY03							
	GSA	Various	0.000	0.000	1QFY03							
Government Engineering Support	WR	NSWC/CD, Bethesda, MD	0.000	0.625	N/A							
	WR	NSWC/DD, Dahlgren, VA	0.000	1.592	N/A							
	WR	NSWC/PC, Panama City, FL	0.000	0.000	N/A							
	Various	Government Activities	0.000	0.000	N/A							
	WR	NAVAIR, Pax River, MD	0.000	0.075	N/A							
	WR	SPAWAR, San Diego, CA	0.000	0.075	N/A							
Program Management Support	Various	Various	0.000	0.389	N/A							
Travel			0.000	0.200								
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	3.934								
Remarks:												
Total Cost			0.000	3.934		0.000		0.000		0.000	CONT	
Remarks:												

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603573N/ADVANCED SURFACE MACHINERY			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**2.997**	**2.867**	**1.468**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
S1314/Advanced Surface Machinery Programs	**2.997**	**2.867**	**1.468**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Defense Emergency Response Funds (DERF) Funds: Not Applicable.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Advanced Surface Machinery Programs develop affordable advanced machinery and subsystems for surface ship propulsion, electric and auxiliary requirements. 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.

(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. The engine system failed the endurance qualification testing in FY02.

(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. Under the terms of the MoU, the U.K. is proceeding with the shock testing which is currently planned for FY04.

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	0603573N/ADVANCED SURFACE MACHINERY SYS	S1314/ADVANCED SURFACE MACHINERY PROGRAMS

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.997	0.000	0.000	0.000
RDT&E Articles Quantity				

The Royal and French navies continued execution of the 3000 hour endurance qualification test. Engine sustained a failure which resulted in rhe requirement for a complete hot section rebuild and the termination of the endurance qualification test. U.S. Navy responsibilities included participation in the Steering Committee, technical review, monitoring tests and accepting test results for compliance to U.S. Navy requirements. Continued ICR technology application studies. The Royal and French navies initiated the shock test with a planned completion in FY04.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.867	0.000	0.000
RDT&E Articles Quantity				

The Royal and French navies will complete the design modifications required to correct the deficiencies identified in the testing program, perform acceptance tests to verify the efficacy of the desing changes and proceed with the preparation for the shock test.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.468	0.000
RDT&E Articles Quantity				

The Royal and French navies will complete the shock test and post qualification test inspections.

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603573N/ADVANCED SURFACE MACHINERY SYSTEMS	S1314/ADVANCED SURFACE MACHINERY PROGRAMS

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 03 Pres Controls):	3.886	2.931	1.533	0.000
Current BES/President's Budget: (FY04 President Controls)	2.997	2.867	1.468	0.000
Total Adjustments	-0.889	-0.064	-0.065	0.000
Summary of Adjustments				
Congressional Adjustments	0.000	-0.033	0.000	0.000
Inflation Adjustments	0.000	-0.031	-0.034	0.000
Reprogrammings	-0.700	0.000	0.000	0.000
Minor adjustments	-0.189	0.000	-0.031	0.000
Subtotal	-0.889	-0.064	-0.065	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603573N/ADVANCED SURFACE MACHINERY SYS	S1314/ADVANCED SURFACE MACHINERY PROGRAMS

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
None										

E. ACQUISITION STRATEGY:

Shock testing will occur in FY 2004. Program ends in FY 2004.

F. MAJOR PERFORMERS:

Northrop Grumman Marine Systems, Sunnyvale California, Prime contractor award date December 1991
David Taylor Research and Development Center/Carderock Division/ Philadelphia Detachment. Testing Support, annual

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)					DATE: **February 2003**							
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603573N/ADVANCED SURFACE MACHINERY SYS			PROJECT NUMBER AND NAME S1314/ADVANCED SURFACE MACHINERY PROGRAMS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	NG, Sunnyvale, Ca	339.561	0.600	10/02						340.161	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	C/CPAF	NG, Sunnyvale, Ca	1.548	0.981	various	0.682	various				3.211	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
Cost Improvements			7.000								7.000	
Award Fees	C/CPAF	NG, Sunnyvale, Ca	8.823								8.823	
Subtotal Product Development			356.932	1.581		0.682		0.000		0.000	359.195	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603573N/ADVANCED SURFACE MACHINERY SYS			PROJECT NUMBER AND NAME S1314/ADVANCED SURFACE MACHINERY PROGRAMS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Philadelphia PA	16.169	1.236	10/02	0.736	10/03				18.141	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			16.169	1.236		0.736		0.000		0.000	18.141	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel			0.050	0.050	various	0.050	various				0.150	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.050	0.050		0.050		0.000		0.000	0.150	
Remarks:												
Total Cost			373.151	2.867		1.468		0.000		0.000	377.486	
Remarks:												

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																															DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-04**									PROGRAM ELEMENT NUMBER AND NAME 0603573N/ADVANCED SURFACE MACHINERY SYS												PROJECT NUMBER AND NAME S1314/ADVANCED SURFACE MACHINERY PROGRAMS											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones	Not Applicable																															
Test & Evaluation	Endurance testing Ends △										Shock Test △																					

R-1 SHOPPING LIST - Item No. 56

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-04**	PROGRAM ELEMENT 0603573N/ADVANCED SURFACE MACHINERY SYS				PROJECT NUMBER AND NAME S1314/ADVANCED SURFACE MACHINERY PROGRAMS			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Endurance Test	1C							
Validation Tests		1C						
Shock Test			3C					

R-1 SHOPPING LIST - Item No. 56

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **FEBRUARY 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603581N - Littoral Combat Ship (LCS)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**0.000**	**33.099**	**158.071**	**180.587**	**303.293**	**293.286**	**146.296**	**175.597**
33096-LCS Development	**0.000**	**33.099**	**158.071**	**72.909**	**195.489**	**293.286**	**146.296**	**175.597**
34018- Littoral Combat Ship Construction	**0.000**	**0.000**	**0.000**	**107.678**	**107.804**	**0.000**	**0.000**	**0.000**

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This Program Element (PE) provides funds for development integration and testing of the Littoral Combat Ship (LCS). Also included in the PE is detail design and construction of the first ship (Flight 0). The LCS is to be a fast, agile, and stealthy surface combatant capable of operating in support of anti-access missions against asymmetric threats in the littorals. Primary access-focused missions include prosecution of small boats, mine counter-measures, littoral anti-submarine warfare (ASW). Secondary missions include: intelligence, surveillance and reconnaissance, homeland defense, Special Operating Forces (SOF) support and logistic support for movement of personnel and supplies.

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **FEBRUARY 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603581N - Littoral Combat Ship (LCS)				PROJECT NUMBER AND NAME 33096 - Littoral Combat Ship Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.000**	**33.099**	**158.071**	**72.909**	**195.489**	**293.285**	**146.296**	**175.597**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The LCS is to be a fast, agile, and stealthy surface combatant capable of operating in support of anti-access missions against asymmetric threats in the littorals. Primary access-focused missions include: prosecution of small boats, mine counter-measures, littoral anti-submarine warfare (ASW). Secondary missions include intelligence, surveillance and reconnaissance, homeland defense, SOF support and logistic support for movement of personnel and supplies. This project provides funds for the total ship system engineering, integration, program execution, platform development, and mission systems development. Mission systems development includes architectures, interfaces and development of mission systems. Platform development includes platform experimentation and platform and ship system design.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	33096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	24.000	107.000	29.000
RDT&E Articles Quantity				

Begin LCS System Development which includes a top level LCS concept, a Performance Specification, integrated master schedule, preliminary interface specification, software development plan and mission system interface data. This will include technology development and demonstration activities to prove maturity of new system and subsystems concepts for application on LCS platform. Begin and continue mission system zone and module development and integration. Begin to fund Navy participation in Joint Advanced Concept Technology Demonstration (ACTD) (SPARTAN) mission module packages. Exercise option to industry for final system design. This will lead to construction of first LCS ships. Completion of final systems design.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	4.900	41.800	18.700
RDT&E Articles Quantity				

Implementation of LCS Technical Team responsible for the participation, oversight and monitoring of the industry concepts. The team consists of Government warfare centers, laboratories, universities and selected technical support contractors. This team will provide the engineering expertise to evaluate/support the industry-developed concepts and technology demonstrations of new system concepts and mission systems in order to reduce risk on components and subsystems. Begin and continue development of test and evaluation master plan (TEMP).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	4.199	9.271	7.209
RDT&E Articles Quantity				

Conduct Analysis of Alternatives (AOA). Develop operational context in which LCS will operate. This will include development of Operational Requirements Document (ORD), Concept of Operations (CONOPS), and Design Reference Mission.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	33096 - Littoral Combat Ship Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	18.000
RDT&E Articles Quantity				

Commence competition for the LCS Flight 1 ships by awarding contracts to up to 6 offerors for Concept Studies that address the ship and the mission system integration.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship	33096 - LCS Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY2003 Previous President's Budget:	0.000	0.000	0.000	0.000
FY2004 President's Budget:	0.000	33.099	158.071	72.909
Total Adjustments	0.000	33.099	158.071	72.909
Summary of Adjustments				
Congressional program increase		30.000		
Congressional undistributed reductions		-0.541		
SBIR/STTR Transfer				
Economic Assumptions				
Reprogrammings		3.999		
New Start Program		-0.359	158.071	72.909
Subtotal	0.000	33.099	158.071	72.909

Schedule:

See individual projects

Technical: TBD

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N- Littoral Combat Ship (LCS)	33096 - LCS Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
BLI 160000 (OPN)	0.000	0.000	0.000	0.000	0.000	0.000	351.201	808.948	CONT	CONT
BLI 212700 (SCN)	0.000	0.000	0.000	0.000	214.656	0.000	623.264	856.220		

E. ACQUISITION STRATEGY:

(U) The LCS acquisition strategy encompasses four phases: Phase I – Concept and Technology Development. Phase II - System Development and Demonstration. Phase III - Production and Deployment, Phase IV - Operations and Support

F. MAJOR PERFORMERS:

TBD.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship			PROJECT NUMBER AND NAME 33096 - LCS Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Preliminary Design (Flight 0)	Compet	TBD	0.000	21.000	4QFY03	59.000	3QFY04	0.000	N/A	CONT	CONT	
Mission Sys Dev & Platform Exp	Various	Various	0.000	0.000	N/A	51.000	Various	29.000	Various	CONT	CONT	
Initial System Design (Flight 1)	Compet	TBD	0.000	0.000	N/A	0.000	N/A	18.000	3QFY05	CONT	CONT	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	21.000		110.000		47.000		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

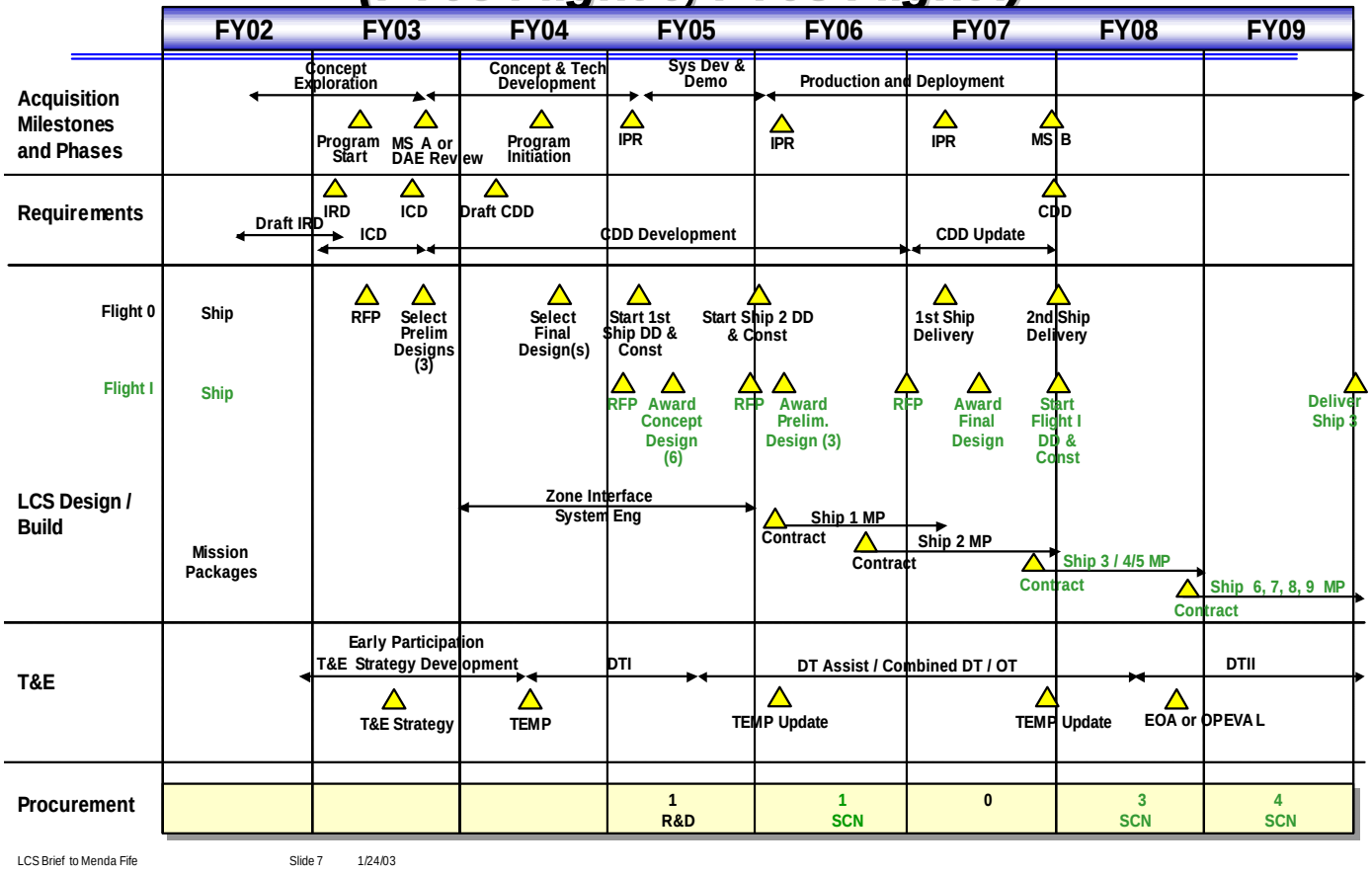
Exhibit R-3 Cost Analysis (page 2)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship			PROJECT NUMBER AND NAME 33096 - LCS Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC/CD Bethesda, MD	0.000	0.000	2QFY03	3.000	1QFY04	1.000	1QFY05	CONT	CONT	
Developmental Test & Evaluation	WX	NSWC/DD, Dahlgren, VA	0.000	0.000	2QFY03	2.000	1QFY04	1.000	1QFY05	CONT	CONT	
Developmental Test & Evaluation	Various	Various	0.000	0.000	N/A	2.000	1QFY04	1.000	1QFY05	CONT	CONT	
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		7.000		3.000		0.000	CONT	
Remarks:												
Contractor Engineering Support	GSA	ANTEON, Arlington, VA	0.000	3.090	2QFY03	4.900	1QFY04	2.709	1QFY05	CONT	CONT	
	GSA	Various	0.000	0.000	N/A	4.271	1QFY04	2.700	1QFY05	CONT	CONT	
Government Engineering Support	WX	NSWC/CD, Bethesda, MD	0.000	2.059	2QFY03	6.800	1QFY04	2.800	1QFY05	CONT	CONT	
	WX	NSWC/DD, Dahlgren, VA	0.000	1.900	2QFY03	8.800	1QFY04	4.800	1QFY05	CONT	CONT	
	WX	NSWC/PC, Panama City, FL	0.000	0.000	N/A	2.100	1QFY04	0.900	1QFY05	CONT	CONT	
	Various	Government Activities	0.000	0.900	2QFY03	3.600	1QFY04	2.800	1QFY05	CONT	CONT	
	WX	NUWC, Newport, RI	0.000	3.000	2QFY03	1.600	1QFY04	0.800	1QFY05	CONT	CONT	
	WR	SPAWAR, San Diego, CA	0.000	0.200	2QFY03	2.900	1QFY04	0.800	1QFY05	CONT	CONT	
Program Management Support	Various	Various	0.000	0.700	2QFY03	4.900	1QFY04	2.800	1QFY05	CONT	CONT	
Labor (Research Personnel)	CPFF	APL/JHU Laurel MD	0.000	0.250	N/A	1.200	1QFY04	1.800	1QFY05	CONT	CONT	
SBIR Assessment											0.000	
Subtotal Management			0.000	12.099		41.071		22.909		0.000	CONT	
Remarks:												
Total Cost			0.000	33.099		158.071		72.909		0.000	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship (LCS)	PROJECT NUMBER AND NAME 33096 - LCS Development

LCS Integrated Schedule (FY05 Flight 0, FY08 Flight I)



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **FEBRUARY 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 33096 - LCS Development			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Initial System Design (Flight 0)		4Q	1Q-4Q					
Preliminary Design (Flight 0)			3Q-4Q	1Q				
Detail Design and Construction (Flight 0)				3Q-4Q	1Q-4Q	1Q		
Mission System Development & Platform Exp			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Initial System Design (Flight 1)				3Q-4Q	1Q-4Q	1Q-4Q		
Detail Design and Construction (Flight 1)							1Q-4Q	1Q-4Q
Milestone A		4Q						
Milestone B						4Q		
First Ship Delivery (Flight 0)						2Q		
Ship 2 Delivery (Flight 0)							1Q	
Lead Ship Delivery (Flight 1)								4Q
NOTE:								
Developmental Testing - TBD								
Operational Testing - TBD								
Engineering Events - TBD								

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **FEBRUARY 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 34018 - Littoral Combat Ship Construction			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.000**	**0.000**	**0.000**	**107.678**	**107.804**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project funds the detail design and construction of the first LCS ship.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	PE 0603581N - Littoral Combat Ship (LCS)	34018 - Littoral Combat Ship Construction

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	107.678
RDT&E Articles Quantity				

Begin first ship detail design and construction. Begin detailed production planning for LCS to include: development of purchase specifications/drawings for all the significant equipment, begin initial competition and selection of components, issue contracts and begin production of components. Begin initial material procurement of long lead equipment. Begin logistics support analysis and develop crew training. Design fixtures and jigs to facilitate construction. Begin production design for early work packages to include work instructions, schedules, work locations, material list, tooling, facilities and manpower requirements. Continue Mission System zone and module architecture development and integration of existing systems into the LCS design. This effort continues into FY 06.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603581N - Littoral Combat Ship (LCS)	34018 - Littoral Combat Ship Construction

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY2003 President's Budget:	0.000	0.000	0.000	0.000
FY2004 President's Budget:	0.000	0.000	0.000	107.678
Total Adjustments	0.000	0.000	0.000	107.678
Summary of Adjustments				
Congressional undistributed reductions				
SBIR/STTR Transfer				
Economic Assumptions				
Reprogrammings				
New Start Program				107.678
Subtotal	0.000	0.000	0.000	107.678

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE 0603581N - Littoral Combat Ship (LCS)	34018 - Littoral Combat Ship Construction

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
BLI 160000 (OPN)	0.000	0.000	0.000	0.000	0.000	0.000	351.201	808.948	CONT	CONT
BLI 212700 (SCN)	0.000	0.000	0.000	0.000	214.656	0.000	623.264	856.220		

E. ACQUISITION STRATEGY:

(U) The LCS acquisition strategy encompasses four phases: Phase 1 - Concept and Technology Development, Phase II - System Development and Demonstration, Phase III - Production and Deployment, Phase IV - Operations and Support

F. MAJOR PERFORMERS:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship (LCS)			PROJECT NUMBER AND NAME 34018 - Littoral Combat Ship Construction						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Competiti	TBD	0.000	0.000	N/A	0.000	N/A	107.678	2QFY05	Continuing	Continuing	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		107.678		0.000	107.678	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

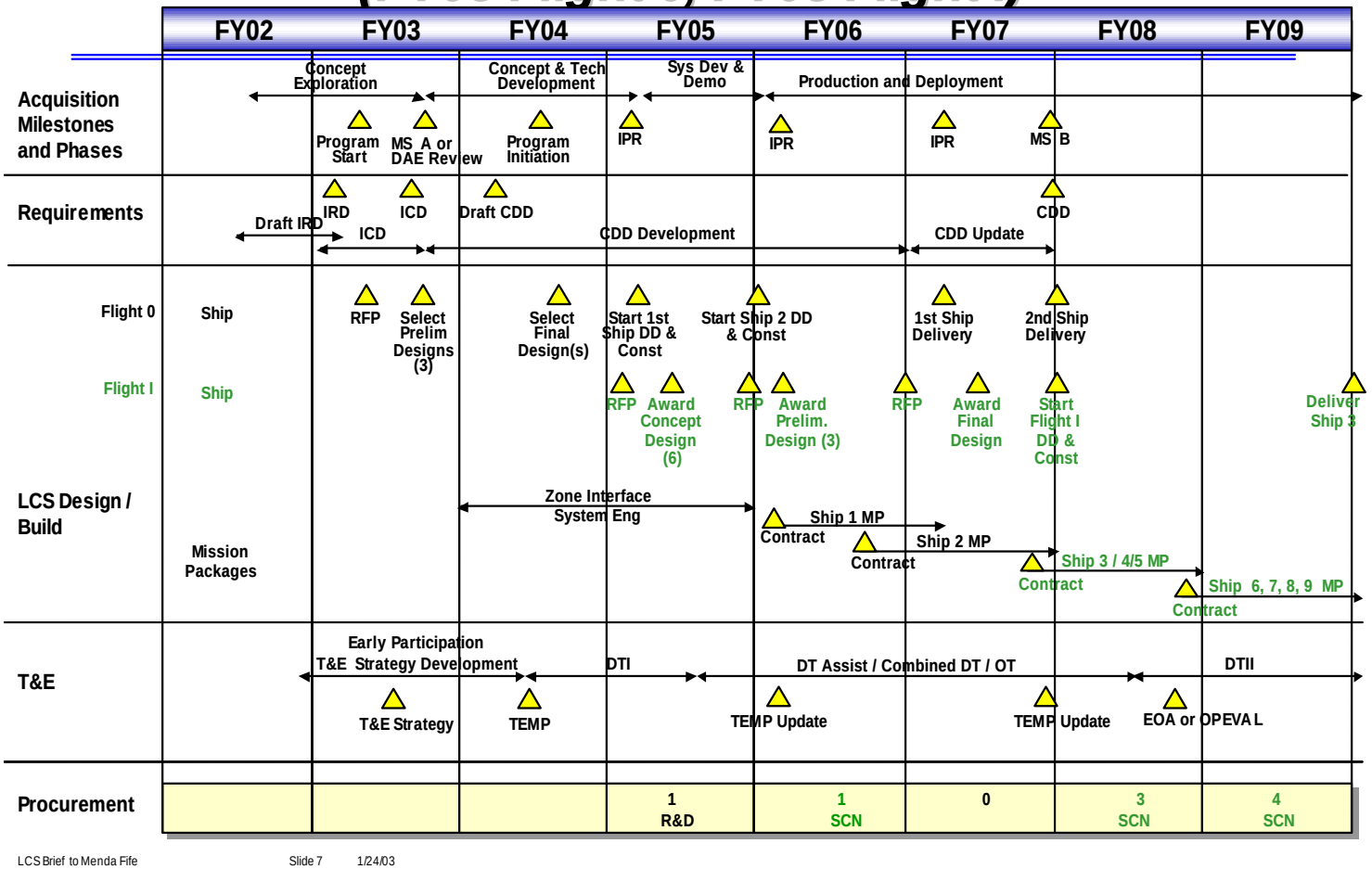
Exhibit R-3 Cost Analysis (page 2)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship (LCS)			PROJECT NUMBER AND NAME 34018 - Littoral Combat Ship Construction						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Subtotal T&E												
Remarks:												
Government Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management												
Remarks:												
Total Cost			0.000	0.000		0.000		107.678		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE - 0603581N - Littoral Combat Ship	PROJECT NUMBER AND NAME 34018 - Littoral Combat Ship Construction

LCS Integrated Schedule (FY05 Flight 0, FY08 Flight I)



LCS Brief to Menda Fife Slide 7 1/24/03

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **FEBRUARY 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT PE 0603581N - Littoral Combat Ship				PROJECT NUMBER AND NAME 33096 - Littoral Combat Ship Construction			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Initial System Design (Flight 0)		4Q	1Q-4Q					
Final System Design (Flight 0)			3Q-4Q	1Q				
Detail Design and Construction (Flight 0)				3Q-4Q	1Q-4Q	1Q		
Mission System Development & Platform Exp			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Initial System Design (Flight 1)				3Q-4Q	1Q-4Q	1Q-4Q		
Detail Design and Construction (Flight 1)							1Q-4Q	1Q-4Q
Milestone A		4Q						
Milestone B						4Q		
First Ship Delivery (Flight 0)						2Q		
Ship 2 Delivery (Flight 0)							1Q	
Lead Ship Delivery (Flight 1)								4Q
NOTE:								
Developmental Testing - TBD								
Operational Testing - TBD								
Engineering Events - TBD								

R-1 SHOPPING LIST - Item No. 58

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE Combat Systems Integration/Battle Force Interoperability 0603582N			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**63.904**	**57.048**	**86.836**	**48.439**	**49.889**	**57.362**	**46.523**	**34.662**
Combat Systems Integ S0164/S2865/S2763	**63.904**	**57.048**	**86.836**	**48.439**	**49.889**	**57.362**	**46.523**	**34.662**

Defense Emergency Response Funds (DERF) Funds: Not Applicable.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project S0164/S2865/S2763: Combat Systems Integration/Battle Force Interoperability:

This project funds: Battle Force (BF) requirements engineering and analysis. BF configuration management through the Deployment minus 30 months (D-30) process, shore based testing and Combat System Integration Testing (CSIT) certification of operational computer systems in a test environment similar to their ultimate shipboard operational environment, and Battle Force interoperability testing (BFIT) which is a prerequisite for operational Certification of the Battle Force configuration prior to deployment. BFIT Certification of deploying Battle Force configurations is 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. It is a Combatant Commanders requirement that all Battle Forces undergo Battle Force Interoperability Testing (BFIT) in the DEP prior to deployment.

Through the implementation of this program, the Navy has made considerable improvements in Battle Force Interoperability. A key milestone in the D-30 Certification Process is the Battle Force Interoperability Testing (BFIT) that occurs 10-12 months prior to deployment. By utilizing the Distributed Engineering Plant, the Navy has been able to identify recurring interoperability problems, which have then been prioritized into 21 main categories by Battle Group Commanders and their staffs. The Navy has prioritized possible interoperability fixes and coordinated with combat system managers to identify the fix path to resolve the interoperability problems. DEPSECDEF Guidance issued in October 2001 directs the Services to resolve interoperability problems in legacy combat systems by FY08 and develop metrics to evaluate operational improvements associated to those corrections.

The core program was directed to focus on and execute to its minimum executable requirement for Anti Air Warfare (AAW) across mission requirements.

Additionally, this project funds Navy's implementation of improvements to specific combat systems as required to correct interoperability problems as necessary to achieve a Single Integrated Air Picture (SIAP). The Joint community has established guidelines for problem corrections, to be addressed in incremental Blocks designed to improve the SIAP. A 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/BFI	PROJECT NUMBER AND NAME S0164/S2865/S2763 CSI/BFI

B. Accomplishments/Planned Program

D-30	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	6.123	6.696	7.477	7.261
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Continue execution of D-30 Process for all Battle Groups in the deployment cycle, including: BFAO efforts, BG Change Control Process, BG Capabilities and Limitations Report and Engineering assessments. Continue configuration management for all battle groups. Continue development of AMPS and Electronic Configuration Control Board (ECCB). In any given year, 12+ Battle Forces are being evaluated in some phase of the D-30 Process, 26 Capabilities and Limitations Documents are delivered, and 6000 configuration change requests are processed.

CSIT	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	9.485	11.028	11.412	11.055
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Conducted 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. Continued planning for out-year Combat System Integration Testing (CSIT). Conduct Combat System Integration Testing (CSIT) of Ship Self Defense System (SSDS) MK-2 Mods 1-2 combat systems and associated elements for CV/LHD/LHA/LPD ship classes and Test Bed Validation. Continue planning for out-year Combat System Integration Testing (CSIT).

BFIT/DEP	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	26.362	15.980	22.959	22.714
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Provided 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, and CONSTELLATION Battle Groups. Conducted Interoperability Systems Engineering Tests (ISETs) for root cause determination of key interoperability trouble report observation. Funded Navy participation in Joint Distributed Engineering Plant (JDEP). 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) in FY03 for ENTERPRISE, CARL VINSON, GEORGE WASHINGTON, HARRY S. TRUMAN, JOHN F. KENNEDY and THEODORE ROOSEVELT Battle Groups; in FY04 for JOHN C. STENNIS, ABRAHAM LINCOLN, HARRY S. TRUMAN, and RONALD REAGAN Battle Groups; in FY05 NIMITZ, THEODORE ROOSEVELT, and ENTERPRISE, DWIGHT EISENHOWER and JOHN F. KENNEDY Battle Groups. Funds Navy participation in Joint Distributed Engineering Plant (JDEP) and related land-based test events.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	0603582N CSI/BFI	S0164/S2865/S2763 CSI/BFI

B. Accomplishments/Planned Program (Cont.)

BF Requirements Engineering and Analysis	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.666	3.892	4.241	3.898
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Continued to develop Design Reference Mission (DRM) to communicate requirements in their operational context. Continue to evolve Battle Force Interoperability Requirements (BFIR) to ensure the ability of the Battle Force to evaluate progressive levels of operational performance and system interoperability. Continue to test and evaluate interoperability of deploying Battle Forces to assess performance improvements. Develop data sets that can be used to apply quantifiable and measurable Battle Force Interoperability Requirements to an Over-Arching Requirements Document or Capstone Requirements Document (CRD) for use by combat system and C4I acquisition programs.

Interoperability Fixes	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	14.000	1.800
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

There are currently 558 unresolved unique interoperability problems identified through BFIT and BGSIT testing and prioritized by the Fleet into 21 categories. Funding is dedicated to develop and implement interoperability fixes to AEGIS and ACDS combat systems, and to validate and certify completed ACDS and AEGIS fixes at the platform and Battle Force level through land-based testing. In accordance with DEPSECDEF Guidance of Oct 2001, interoperability problem corrections are evaluated according to their ability to improve the operational performance of deploying Battle Forces. In FY04 the HARRY S. TRUMAN, NIMITZ, and ENTERPRISE Battle groups will receive fixes addressing approximately 130 of the Fleet's top issues. Systems impacted include C2P, CEC 2.1, ACDS Block 0, FFG CDS, Auto ID, AWS 5.4 and AWS 6.3.

Navy SIAP Improvements	FY 02	FY 03	FY 04	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.719	1.711
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Navy implementation of combat system corrections as needed to affect a Single Integrated Air Picture (SIAP). Combat systems includes AEGIS.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	0603582N CSI/BFI	S0164/S2865/S2763

B. Accomplishments/Planned Program (Cont.)

CNI	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	16.320	15.639	25.028	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Per Congressional direction funds will be used for SBIR Phase III efforts to develop Common Network Interface Capabilities for theater and air missile defense.

**FY03 Congressional plus-up of $16M for Common Command and Decision/Program Element 0604518N incorrectly placed under Program Element 0603582N, CSI/BFI.

WOMBAT	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.948	0.000	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

Funded development of Wideband Optically Multiplexed Beamformer.

Marine Corp	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.489	0.000	0.000
	N/A	N/A	N/A	N/A

Congressional Plus-up provided for USMC Institute.

HIGH ENERGY LASER	*FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	3.324	0.000	0.000
RDT&E Articles Quantity	N/A	N/A	N/A	N/A

FY 2002 Accomplishments: Developed small and inexpensive inertial measurement system that will provide precision pointing control and instrumentation for a variety of Acquisition Tracking and Pointing (ATP) system applications with primary emphasis on laser weapons. Performed systems engineering to develop the requirements and specifications for laser targeting power and timing as part of the laser designation and weapon system. System engineering and analysis for the operational utilization concept and the complementary operational effectiveness of the combined laser system components with the defensive missile system and combat system. Performed systems engineering and analysis of Laser material interaction and Lethality.

* Funded under PE 0604574N

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	0603582N CSI/BFI	S0164/S2865/S2763 CSI/BFI

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	61.368	40.464	43.955	43.323
Current BES/President's Budget: (FY04 President's Controls)	63.904	57.048	86.836	48.439
Total Adjustments	2.536	16.584	42.881	5.116
Summary of Adjustments				
Inflation Adjustment		-0.619	-2.008	-1.044
Congressional rescissions	-0.181	-0.698		
Program Adjustment	3.999	-3.999	17.639	4.930
SBIR/STTR Transfer	-0.936		26.000	
Miscellaneous Adjustments	-0.346		-0.521	-0.532
SIAP Tier 2&3 funding to JROCM			20.286	12.903
SIAP Reduction			-18.500	-11.100
NWCF RATES			-0.015	-0.041
Congressional increases		21.900		
Subtotal	2.536	16.584	42.881	5.116

Schedule:

Planned Battle Force Interoperability Tests (BFITs):

FY03: 1st Quarter: NIMITZ, THEODORE ROOSEVELT, 2nd Quarter: ENTERPRISE, 3rd Quarter: GEORGE WASHINGTON, CARL VINSON, 4th Quarter: JOHN F. KENNEDY

FY04: 1st Quarter: N/A, 2nd Quarter: JOHN C. STENNIS, 3rd Quarter: HARRY S. TRUMAN, 4th Quarter: ABRAHAM LINCOLN, RONALD REAGAN

FY05: 1st Quarter: ENTERPRISE, 2nd Quarter: DWIGHT EISENHOWER, NIMITZ, 3rd Quarter: THEODORE ROOSEVELT 4th Quarter: JOHN F. KENNEDY

Planned Combat System Integration Tests (CSITs):

FY03: 1st Quarter: FFG Regression Test, CV/CVN Block 0, LHD Block 0, 2nd Quarter: CVN 68, CVN 67,/LHD 1, FFG 7 3rd Quarter: CVN 76, CVN 67,/LHD 1, FFG 7 4th Quarter: CVN 76,

FY04: 1st Quarter: CVN 76, LSD 41/49 2nd Quarter: CVN 76, 3rd Quarter: LPD 17, CVN 65, CVN 71, CVN 72 ACDS Blk 0, LHD 4, 4th Quarter: LPD 17, SSDS MK2 MOD 1, LHD 7

FY05: 1st Quarter: LHD 7, 2nd Quarter: N/A, 3rd Quarter: LHD 8 4th Quarter: LPD 18

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E,N/BA-4	0603582N CSI/BFI	S0164/S2865/S2763 CSI/BFI

D. 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)
PE 0605853N (CHENG)

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS:

Naval Surface Warfare Center, Port Hueneme, CA - Combat System Integration Testing/Battle Force Interoperability effort.

Naval Surface Warfare Center, Dahlgren Division, VA - Distributed Engineering Plant (DEP), Battle Force Interoperability Requirements (BFIR), and Battle Force Interoperability Operational Advisory Group (BFI OAG) efforts.

Digital Systems Resources, Inc. (DSR), Fair Lakes, VA- Prime contractor for Common Command and Decision (CC&D), Award Date: February 2002

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

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

PROJECT NUMBER AND NAME
S0164/S2865/S2763 CSI/BFI

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Combat Sys Integ Testing/SQI	WR/RC	NSWC PHD	7.250	6.909	VAR	8.600	VAR	8.100	VAR	CONT.	CONT.	
Combat Sys Integ Testing/SQI	WR/RC	NSWC DD								CONT.	CONT.	
Combat Sys Integ Testing/SQI	WR/RC	VARIOUS	1.778	1.741		2.041		1.930		CONT.	CONT.	
D-30 Process	WR/RC	NSWC PHD	4.390	2.520	VAR	5.740	VAR	5.383	VAR	CONT.	CONT.	
D-30 Process	WR/RC	NSWC DD								CONT.	CONT.	
D-30 Process	WR/RC/PD	VARIOUS	1.308	1.380	VAR	1.737	VAR	1.666	VAR	CONT.	CONT.	
DEP/BGIT Cert/JDEP	WR/RC	NSWC PHD								CONT.	CONT.	
DEP/BGIT Cert/JDEP	WR/RC	NSWC DD	20.331	14.500		20.253		17.293		CONT.	CONT.	
DEP/BGIT Cert/JDEP	WR/RC/PD	VARIOUS	2.204	1.645	VAR	2.390	VAR	1.890	VAR	CONT.	CONT.	
WOMBAT	WR/RC	NSWC CRANE	1.948	0.000		0.000		0.000		CONT.	CONT.	
BFI Requirements	WR/RC	NSWC DD	1.052	2.079		2.499		2.045		CONT.	CONT.	
BFI Requirements	WR/RC/PD	VARIOUS	1.616	1.513		1.742		1.653		CONT.	CONT.	
Combat System Fixes	WR/RC	NSWC DD	N/A	N/A	VAR	7.432	VAR	0.800	VAR	CONT.	CONT.	
Combat System Fixes	WR/RC	VARIOUS	N/A	N/A		0.000		0.000		CONT.	CONT.	
Combat System Fixes	WR/RC	NSWC DD-CDSA DI	N/A	N/A		1.000		0.500		CONT.	CONT.	
Combat System Fixes	WR/RC	VARIOUS	N/A	N/A		0.000		0.000		CONT.	CONT.	
Fix Validation Testing	WR/RC	NSWC DD	N/A	N/A	VAR	1.500	VAR	0.500	VAR	CONT.	CONT.	
CNI	WR/RC	NSWC DD	0.000	0.000		0.000		0.000		CONT.	CONT.	
CNI Contract	VARIOUS	VARIOUS	16.320	15.639		25.028		0.000		CONT.	CONT.	
Contract Engineering Support	VARIOUS	VARIOUS	4.157	4.000	VAR	3.738	VAR	3.618	VAR	CONT.	CONT.	
Contract Program Mgt Support	VARIOUS	VARIOUS	1.450	1.109		1.167		1.100		CONT.	CONT.	
Single Integrated Air Picture	VARIOUS	VARIOUS	0.000	0.000	VAR	1.719	VAR	1.711	VAR	CONT.	CONT.	
HEL	VARIOUS	VARIOUS	0.000	1.650	VAR	0.000		0.000		CONT.	CONT.	
HEL Contracts	VARIOUS	PSU/APL	0.000	1.674	VAR	0.000		0.000		CONT.	CONT.	
USMC	VARIOUS	VARIOUS	0.000	0.489	VAR	0.000		0.000		CONT.	CONT.	
Travel		NAVSEA TRAVEL	0.100	0.200		0.250		0.250		CONT.	CONT.	
										CONT.	CONT.	
Subtotal Product Development			63.904	57.048		86.836		48.439		CONT.	CONT.	

Remarks:

EXHIBIT R4, Schedule Profile											DATE: **February 2003**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**					PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/BFI						PROJECT NUMBER AND NAME S0164/S2865/S2763 CSI/BFI						
Fiscal Year	2002				2003				2004				2005				
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Lincoln BFIT	▲						△				△						
GW BFIT	▲						△										
Kitty Hawk BFIT	▲						△										
Truman BFIT			▲								△						
Constellation BFIT		▲															
Nimitz BFIT				▲								△					
Roosevelt BFIT					▲										△		
Enterprise BFIT						△							△				
Vinson BFIT					▲												
JFK BFIT									△							△	
Stennis BFIT							△										
Reagan BFIT														△			
Eisenhower BFIT															△		
FFG Regression Test					▲												
CV/CVN BLK 0 CSIT					▲												
LHD BLK 0 CSIT					▲												
CVN 68 CSIT					▲												

R-1 SHOPPING LIST - Item No. 59

EXHIBIT R4, Schedule Profile										DATE: **February 2003**							
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**					PROGRAM ELEMENT NUMBER AND NAME 0603582N CSI/BFI					PROJECT NUMBER AND NAME S0164/S2865/S2763 CSI/BFI							
Fiscal Year	2002				2003				2004				2005			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CVN 67 CSIT																
LHD 1 CSIT																
FFG 7 CSIT																
CVN 76 CSIT																
LSD 41/49 CSIT																
LPD 17 CSIT																
CVN 65 CSIT																
CVN 71 CSIT																
CVN 72 ACDS BLK 0 CSIT																
LHD 4 CSIT																
SSDS MK2 MOD1 CSIT																
LHD 7 CSIT																
LHD 8 CSIT																
LPD 18 CSIT																

R-1 SHOPPING LIST - Item No. 59

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**	PROGRAM ELEMENT 0603582N CSI/BFI				PROJECT NUMBER AND NAME S0164/S2865/S2763 CSI/BFI			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
ABRAHAM LINCOLN BFIT	1Q		2Q					
GEORGE WASHINGTON BFIT	1Q	3Q						
KITTY HAWK BFIT	1Q	3Q						
HARRY S. TRUMAN BFIT	3Q		2Q					
NIMITZ BFIT	4Q		4Q					
CONSTELLATION BFIT	2Q							
THEODORE ROOSEVELT BFIT		1Q		3Q				
ENTERPRISE BFIT		2Q		1Q				
CARL VINSON BFIT		1Q						
JOHN F. KENNEDY BFIT		4Q		4Q				
JOHN C. STENNIS BFIT		3Q						
RONALD REAGAN BFIT				2Q				
DWIGHT EISENHOWER BFIT				2Q				
FFG REGRESSION TEST		1Q						
CV/CVN BLOCK 0 CSIT		1Q						
LHD BLOCK 0 CSIT		1Q						
CVN 68 CSIT		2Q						
CVN 67 CSIT		2Q/3Q						
LHD 1 CSIT		2Q/3Q						
FG 7 CSIT		2Q/3Q						
CVN 76 CSIT		3Q/4Q	1Q/2Q					
LSD 41/49 CSIT			1Q					
LPD 17 CSIT			3Q/4Q					
CVN 65 CSIT			3Q					
CVN 71 CSIT			3Q					
CVN 72 ACDS BLK 0 CSIT			3Q					
LHD 4 CSIT			3Q					
SSDS MK2 MOD 1 CSIT			4Q					
LHD 7 CSIT			4Q	1Q				
LHD 8 CSIT				3Q				
LPD 18 CSIT				4Q				

CLASSIFICATION:

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

Defense Emergency Response Funds (DERF) Funds: Not Applicable

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

B. PROGRAM ACCOMPLISHMENTS AND PLANS:

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

1. FY2004 PLANS:

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

2. FY2005 PLANS:

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

3. FY2006 PLANS:

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

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603609N/Conventional Munitions

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. 60

CLASSIFICATION:

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

CLASSIFICATION: Unclassified

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	K1821/Conventional Fuzed Warhead Package

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	11.582	8.156		
RDT&E Articles Quantity				

SM-2 Block lllB MK 45 MOD 14 TDD: FY 02: Continued advanced development
FY 03: Complete advanced development

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.045	1.400	1.250	
RDT&E Articles Quantity				

Office of Special Projects

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.743	2.593		
RDT&E Articles Quantity				

Advanced Warhead Technology Selection: FY 02: Continued warhead effectiveness analysis, end game analysis and multi-point initiator improvements
FY 03: Incorporate results of Reactive Materials Enhanced Warhead FNC and continue warhead effectiveness analysis, end game analysis, and multi-point initiator improvements.

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION: Unclassified

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	K1821/Conventional Fuzed Warhead Package

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.200	1.000		
RDT&E Articles Quantity				

Micro-Electro-Mechanical System Safe and Arm Device: FY 02: Preliminary design risk reduction
FY 03: Continue preliminary design risk reduction

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.785	0.241	0.821	0.433
RDT&E Articles Quantity				

Future Standard Missile Systems (FSMS) Studies: FY 02: Continued system engineering studies to support mid and far term strategic planning for warhead and fuze development.
FY 03: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.
FY 04: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development.
FY 05: Continue system engineering studies to support mid and far term strategic planning for warhead and fuze development

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			11.642	14.147
RDT&E Articles Quantity				

Advanced Fuze Technology Development: FY 04: Perform preliminary concept design review of Guidance Integrated Fuzing and MEMS Safe and Arm Device (SAD) technologies.
FY 05: Risk reduction, and other preparations for transitioning advance fuze technologies to System Development and Demonstration.

R-1 SHOPPING LIST - Item No. 60

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	K1821/Conventional Fuzed Warhead Package

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	18.308	17.743	18.921	18.909
Current BES/President's Budget: (FY 04/05 Pres Controls)	17.355	13.390	13.713	14.580
Total Adjustments	-0.953	-4.353	-5.208	-4.329
Summary of Adjustments				
Congressional program reductions		-4.000		
Congressional undistributed reductions				
Congressional rescissions	-0.039			
SBIR/STTR Transfer	-0.415			
Reprogrammings	-0.358			
Business Process Reform		-0.055		
Economic Assumptions	-0.049	-0.077	-0.020	-0.020
IT Cost Growth		-0.025		
Overhead and Direct Cost Reduction			-0.109	-0.158
Ftprint Reduction			-0.012	-0.018
Single Site Common Support			-0.017	-0.026
Reduction in Suort Contractors			-0.122	-0.208
Examine Non Core Competencies			-0.008	-0.009
FY03 FFRDC Reduction		-0.003		
FY02 Actuals	-0.092			
Inflation Savings		-0.146		
PBD 426			-0.011	
Non S&T R&D Offset			-1.552	
PBD 203 ACTD Offsets			-0.252	-0.318
NWCF Rates - R&D Fuel			0.011	0.018
PBD 604 Nonpay Inflation			-0.893	-0.854
PBD 630 Project Correction		-0.047		
Post Production R&D Continuation			-2.223	-2.736
Subtotal	-0.953	-4.353	-5.208	-4.329

Schedule: Not Applicable

Technical: Not Applicable

CLASSIFICATION: Unclassified

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	K1821/Conventional Fuzed Warhead Package

D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS:

Raytheon Company, Tucson, AZ; SM-2 Block IIIB MK 45 MOD 14 TDD development; Oct 02
NSWC Dahlgren, Dahlgren, VA; Advanced Warhead Technology Analysis;
NAWC China Lake

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION: Unclassified

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Design and Analysis	WR	NSWC Dahlgren	31.561	0.060	10/02	0.500	11/03	1.000	11/04	Continuing	Continuing	
	WR	NAWC China Lake	61.616	2.085	10/02	2.993	11/03	3.000	11/04	Continuing	Continuing	
	CPAF	Raytheon	14.053	5.283	10/02	1.700	11/03	2.936	11/04	Continuing	Continuing	
	PR	JHU/APL	1.889	1.128	10/02	4.100	11/03	3.850	11/04	Continuing	Continuing	
	RC	ONR	0.052	0.015						0.000	0.067	
	MIPR	MIT/LL	0.400							0.000	0.400	
	WR	SPAWAR	0.520							0.000	0.520	
	WR	NSWC Port Hueneme	0.147							0.000	0.147	
	WR	NSWC Indian Head	0.800			0.500	11/03	1.000	11/04	Continuing	Continuing	
	PD	Office of Special Projects	8.994	1.400	10/02	1.250	11/03			0.000	11.644	
Hardware Fabrication	WR	NSWC Dahlgren	6.257							0.000	6.257	
	WR	NAWC China Lake	8.683							0.000	8.683	
	CPAF	Raytheon	8.516							0.000	8.516	
	PD	Office of Special Projects	41.549							0.000	41.549	
Subtotal Product Development			185.037	9.971		11.043		11.786		Continuing	Continuing	

Remarks:

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

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

CLASSIFICATION: **Unclassified**

EXHIBIT R4, Schedule Profile: **NOT APPLICABLE**																																
																									DATE: **February 2003**							
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions												PROJECT NUMBER AND NAME K1821/Conventional Fuzed Warhead Package											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones LRIP I FY 05 LRIPII FY 06 FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

CLASSIFICATION:

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

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA - 4**	PROGRAM ELEMENT NUMBER AND NAME 0603609N Conventional Munitions				PROJECT NUMBER AND NAME 32299 Non-Nuclear Expendable Ordnance (NNEO)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**0.897**	**0.916**	**25.773**	**25.778**	**25.782**	**10.930**	**10.941**	**10.957**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

CLASSIFICATION:

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

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.897	0.916	0.328	0.000
RDT&E Articles Quantity				

Continued and completed Qualification of Multi-Function Fuze.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.445	0.778
RDT&E Articles Quantity				

This program will incorporate new technology into production of an extended range propelling charge (20 nautical miles), improving producibility and performance.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	25.000	25.000
RDT&E Articles Quantity				

This project currently supports the Guidance Integrated Fuze (GIF) demonstration and incremental development program. GIF is a "smart fuze", conforming to DoD and NATO interface requirements, that can be retrofitted on all 105mm, 5" and 155mm projectiles. While retaining all necessary conventional fuzing functions, GIF will provide GPS accuracy to the entire inventory of conventional projectiles.

CLASSIFICATION:

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

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	0.924	0.937	1.057	0.993
Current BES/President's Budget: (FY04/05 PRESBUD Controls)	0.897	0.916	25.773	25.778
Total Adjustments	-0.027	-0.021	24.716	24.785
Summary of Adjustments				
Reprogrammings	-0.018		25.000	25.000
Miscellaneous Adjustments	-0.009	-0.021	-0.160	-0.071
Post Production R&D Continuation			-0.124	-0.144
Subtotal	-0.027	-0.021	24.716	24.785

Schedule:

Not Applicable

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

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

D. OTHER PROGRAM FUNDING SUMMARY:

Related RDT&E: PE 0603795 Naval Surface Fire Support

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
BLIN 025000 5"/54 Ammunition	0	0	0.7	0.7	0	0	0	0	N/A	N/A

E. ACQUISITION STRATEGY:

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

F. MAJOR PERFORMERS:

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

Exhibit R-3 Cost Analysis (page 1) | DATE: February 2003

APPROPRIATION/BUDGET ACTIVITY: RDT&E, N / BA 4 | PROGRAM ELEMENT: 0603609N Conventional Munitions | PROJECT NUMBER AND NAME: 32299 Non-Nuclear Expendable Ordnance (NNEO)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s 99/02 Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC Dahlgren	1.933								1.933	
	C/CPFF	ALLIANT	1.054								1.054	
	SS/CPFF	MOTOROLA	0.336								0.336	
	WR	NSWC Indian Head	0.600			0.445		0.448			1.493	
	CPFF	GIF Contractor 1				10.130	10/03	12.002	TBD		22.132	
	CPFF	GIF Contractor 2				10.130	10/03	2.338	TBD		12.468	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			3.923	0.000		20.705		14.788		0.000	39.416	

Remarks:

Development Support	WR	NSWC Dahlgren				0.500		0.350			0.850	
Software Development	WR	NSWC Dahlgren				0.275		0.200			0.475	
Training Development	WR	NSWC Dahlgren						0.125			0.125	
Training Development	MIPR	ARDEC						0.350			0.350	
Integrated Logistics Support	WR	NSWC Dahlgren						0.175			0.175	
Integrated Logistics Support	MIPR	ARDEC						0.480			0.480	
Configuration Management	WR	NSWC Dahlgren				0.350		0.400			0.750	
Contract Support	WR	NSWC Dahlgren				0.150		0.350			0.500	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		1.275		2.430		0.000	3.705	

Remarks:

Exhibit R-3 Cost Analysis (page 2) | DATE: February 2003

APPROPRIATION/BUDGET ACTIVITY: RDT&E, N / BA - 4 | PROGRAM ELEMENT: 0603609N Conventional Munitions | PROJECT NUMBER AND NAME: 32299 Non-Nuclear Expendable Ordnance (NNEO)

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

CLASSIFICATION:

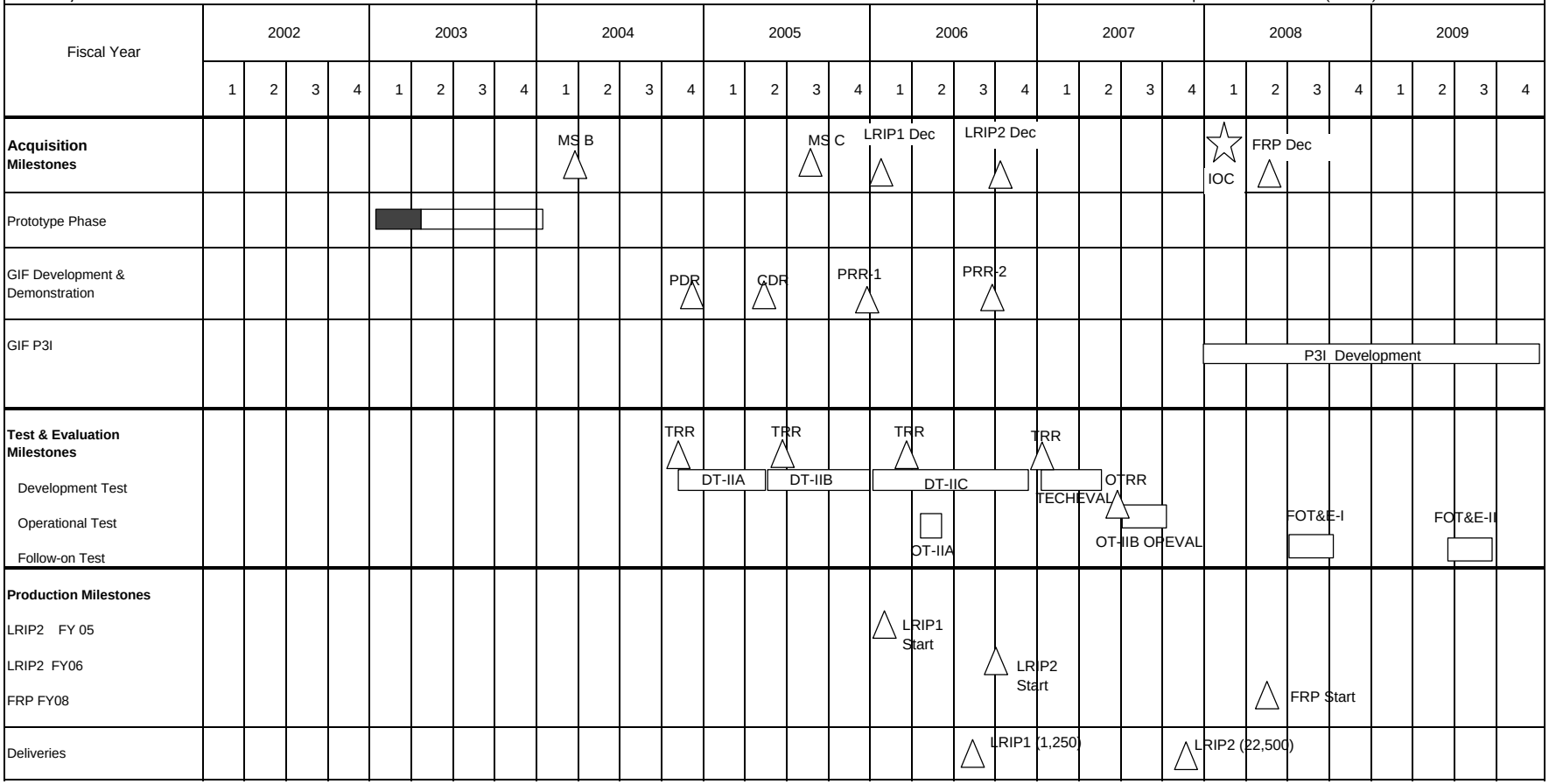
EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603609N Conventional Munitions

PROJECT NUMBER AND NAME: 32299 Non-Nuclear Expendable Ordnance (NNEO)



R-1 SHOPPING LIST - Item No. 60

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603609N Conventional Munitions				PROJECT NUMBER AND NAME 32299 Non-Nuclear Expendable Ordnance (NNEO)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone B			1Q					
Preliminary Design Review (PDR)			4Q					
Test Readiness Review (TRR)			4Q					
Developmental Test (DT-IIA)			4Q					
Critical Design Review (CDR)				2Q				
Test Readiness Review (TRR)				2Q				
Developmental Test (DT-IIB)				2Q				
Milestone C				3Q				
Production Readiness Review (PRR-1)				4Q				
LRIP1 Decision					1Q			
LRIP1 Sart					1Q			
Test Readiness Review (TRR)					1Q			
Developmental Test (DT-IIC)					1Q			
Operational Testing (OT-IIA)					2Q			
LRIP1 Delivery					3Q			
Production Readiness Review (PRR-2)					3Q			
LRIP2 Decision					4Q			
LRIP 2 Start					4Q			
Test Readiness Review (TRR)						1Q		
TECHEVAL						1Q		
Operational Test Readiness Review (OTRR)						2Q		
OPEVAL						3Q		
LRIP 2 Delivery						4Q		
Initial Operational Capability (IOC)							1Q	
P3I Development Start							1Q	
Full Rate Production (FRP) Decision							2Q	
FRP Start							2Q	
FOT&E1							3Q	
FOT&E2								3Q

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

CLASSIFICATION:

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

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.252	1.237	1.188	1.238
RDT&E Articles Quantity				

Continue validation and assessment of weapon systems POA&M's for IMAD compliance. Continue compilation and analysis of weapon system, energetic material and generic technology IMAD test data.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.607	0.905	0.703	0.698
RDT&E Articles Quantity				

Demonstrate high explosives that show improved IMAD characteristics while maintaining or improving operational performance. Complete qualification of internal blast explosive. Continue evaluation of pressed and cast metal accelerating explosives. Plan to complete qualification of high performance booster explosive to weapons systems. Begin qualification of best candidate metal accelerating explosive.
Accomplishments: Demonstrated high explosives that show improved IMAD characteristics while maintaining or improving operational performance. Completed qualification of internal blast explosive. Continued evaluation of pressed metal accelerating explosives. Began qualification high performance booster explosive to weapons systems.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.048	0.048	0.035	0.037
RDT&E Articles Quantity				

Evaluate ordnance and container concepts. Continue modeling applications that reduce and enhance IMAD warhead design.

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

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

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.859	1.492	1.127	1.130
RDT&E Articles Quantity				

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. Demonstrate an insensitive multi-mission, high performance rocket motor. Evaluate options for minimum smoke propellants for shoulder launched applications.

Accomplishments: Evaluated and demonstrated IMAD propellants and propulsion systems which 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.

CLASSIFICATION:

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

C. PROGRAM CHANGE SUMMARY:

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

Schedule:

NOT APPLICABLE

Technical:

NOT APPLICABLE

CLASSIFICATION:

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

D. OTHER PROGRAM FUNDING SUMMARY: NOT APPLICABLE

E. ACQUISITION STRATEGY:

NOT APPLICABLE

F. MAJOR PERFORMERS:

NAWC WPN DIV/China Lake - Propulsion Development and Evaluation	11/02
NOSSA/Indian Head - Program Management and Explosive Development	11/02

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603609N/Conventional Munitions			PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Propulsion Dev. And Eval.	WR	NAWC WPN DIV/China Lake	83.931	1.492	11/02	1.127	11/03	1.130	11/04	Continuing	Continuing	NA
	RCP	NAWC WPN DIV/China Lake	10.250	0.000	NA	0.000	NA	0.000	NA	NA	10.250	NA
Explosives Dev. And Eval.	WR	NSWC/Indian Head Div.	68.334	0.898	11/02	0.693	11/03	0.693	11/04	Continuing	Continuing	NA
Ordnance Dev. And Eval.	WR	NSWC/Dahlgren Div.	19.338	0.048	11/02	0.035	11/03	0.037	11/04	Continuing	Continuing	NA
Pyrotechnic Dev. And Eval.	WR	NSWC/Crane Div.	6.553	0.007	11/02	0.010	11/03	0.005	11/04	Continuing	Continuing	NA
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			188.406	2.445		1.865		1.865		Continuing	Continuing	NA

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.

Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks:

CLASSIFICATION:

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

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

EXHIBIT R4, Schedule Profile: **NOT APPLICABLE**																															DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603609N/Conventional Munitions												PROJECT NUMBER AND NAME S0363/Insensitive Munitions Advanced Development											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery				SSR																												
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIPII FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

CLASSIFICATION:

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

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	S2611/Environmentally Safe Energetic Materials

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.466	0.000	0.000	0.000
RDT&E Articles Quantity				

Continued identification and evaluation of low cost thermoplastic elastomer binders. Evaluated candidate bomb fill with reduced environmental impact in manufacturing and demilitarization. Continued to evaluate properties of reclaimed energetic ingredients for use in Navy explosives and propellants. Initiated the development and evaluation of an insensitive green minimum smoke propellant. Evaluated and predicted the environmental effect and associated life cycle costs for energetic materials and processes. Began the development of a methodology and measurable parameters to evaluate the environmental effects of energetics manufacturing, use and demilitarization.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	S2611/Environmentally Safe Energetic Materials

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	2.478	0.000	0.000	0.000
Current BES/President's Budget: (FY04 Pres Controls)	2.466	0.000	0.000	0.000
Total Adjustments	-0.012	0.000	0.000	0.000
Summary of Adjustments:				
Economic Assumptions	-0.012			
	-0.012	0.000	0.000	0.000

Schedule:

NOT APPLICABLE

Technical:

NOT APPLICABLE

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	S2611/Environmentally Safe Energetic Materials

D. OTHER PROGRAM FUNDING SUMMARY: NOT APPLICABLE

E. ACQUISITION STRATEGY:

NOT APPLICABLE

F. MAJOR PERFORMERS:

NSWC Indian Head Division - Technology Development	11/01

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603609N/Conventional Munitions				PROJECT NUMBER AND NAME S2611/Environmentally Safe Energetic Materials						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Technology Development	WR	NSWC/Indian Head Div.	5.295	0.000	NA	0.000	NA	0.000	NA	NA	5.295	NA
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			5.295	0.000		0.000		0.000		0.000	5.295	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

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

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

EXHIBIT R4, Schedule Profile: **NOT APPLICABLE**

DATE: **FEBRUARY 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603609N/Conventional Munitions	S2611/Environmentally Safe Energetic Materials

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Prototype Phase																																
Radar System Development																																
EDM Radar Delivery																																
Software 1XXSW Delivery 2XXSW Delivery																																
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones LRIP I FY 05 LRIPII FY 06 FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 60

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

CLASSIFICATION:

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

R-1 SHOPPING LIST - Item No. 60

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev. and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**	PROJECT NUMBER AND NAME: **B0020 Advanced Amphibious Assault Vehicle (AAAV)**	

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
B0020 ADVANCED AMPHIBIOUS ASSAULT VEHICLE	**252.634**	**270.255**	**240.695**	**237.819**	**184.358**	**164.024**	**72.013**	**14.612**	**Cont**	**Cont**
Quantity of RDT&E Articles		5	4							

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

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 1970s. 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.

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.

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.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY2002	FY2003	FY2004	FY2005
Accomplishment/Effort Subtotal Cost	**229.994**	**243.424**	**208.150**	**188.773**
RDT&E Articles Qty		**5**	**4**	

(U) Fabrication of SDD phase prototypes. Design development. Developmental Testing. Survivability Program. SDD prototype shakedown testing.

FY02: Initiate fabrication of the SDD phase prototypes. Continue design development of the AAAV (P) and AAAV (C). Continue Developmental Testing (DT) of PDRR prototypes. Continue AAAV survivability program.

FY03: Initiate contractor/government shakedown testing of SDD prototypes. 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 SDD prototypes.

FY04: Continue design development, manufacturing planning, and producibility design enhancements of the AAAV(P) and AAAV(C) designs. Continue the AAAV survivability program. Continue/complete fabrication and delivery of SDD prototypes.

FY05**:** Continue design development, manufacturing planning, and producibility design enhancements of the AAAV(P) and AAAV(C) designs. Continue the AAAV survivability program. Complete fabrication and delivery of SDD prototypes.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev. and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**	PROJECT NUMBER AND NAME: **B0020 Advanced Amphibious Assault Vehicle (AAAV)**	

COST ($ in Millions)	FY2002	FY2003	FY2004	FY2005
Accomplishment/Effort Subtotal Cost	**10.184**	**2.184**	**4.939**	**5.338**
RDT&E Articles Qty				

(U) Continue to provide in-house technical support.

COST ($ in Millions)	FY2002	FY2003	FY2004	FY2005
Accomplishment/Effort Subtotal Cost	**7.461**	**6.833**	**4.203**	**4.029**
RDT&E Articles Qty				

(U) Continue to provide program support to coordinate and update program planning, program analysis, and program execution.

COST ($ in Millions)	FY2002	FY2003	FY2004	FY2005
Accomplishment/Effort Subtotal Cost	**0.800**	**8.361**	**8.385**	**11.479**
RDT&E Articles Qty				

(U) Develop training courseware, devices and simulators.

FY02: Initiate development of AAAV training courseware.

FY03: Initiate development of AAAV training devices/simulators. Continue development of AAAV training courseware.

FY04: Continue development of AAAV training devices/simulators. Continue development of AAAV training courseware.

FY05: Continue development of AAAV training devices/simulators. Continue/Complete development of AAAV training courseware.

COST ($ in Millions)	FY2002	FY2003	FY2004	FY2005
Accomplishment/Effort Subtotal Cost	**4.195**	**9.453**	**15.018**	**28.200**
RDT&E Articles Qty				

(U) Ballistic Vulnerability testing. RAM-D testing. EOA.

FY02: Conduct RAM-D testing of PDRR prototypes. Complete EOA.

FY03: Initiate Ballistic Vulnerability testing of one PDRR prototype. Initiate DT of SDD prototypes. Initiate Joint Live Fire Testing of MK-46 weapon station.

FY04: Complete Ballistic Vulnerability Testing of PDRR prototype. Continue DT of SDD prototypes. Continue Joint Live Fire Testing of MK-46 weapon station.

FY05: Continue DT of SDD prototypes. Conduct Operational Testing. Complete Joint Live Fire Testing of MK-46 weapon station.

	FY2002	FY2003	FY2004	FY2005
(U) Total $	**252.634**	**270.255**	**240.695**	**237.819**

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev. and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**	PROJECT NUMBER AND NAME: **B0020 Advanced Amphibious Assault Vehicle (AAAV)**

(U) PROJECT CHANGE SUMMARY:

	FY2002	FY2003	FY 2004	FY 2005
(U) FY 2003 President's Budget:	260.627	272.092	246.698	126.083
(U) Adjustments from the President's Budget:				
(U) Congressional Program Reductions	-1.277	-6.512		
(U) Congressional Rescissions				
(U) Congressional Increases		4.675		
(U) Inflation/Pricing Adjustments			-6.003	-5.464
(U) SBIR/STTR Transfer	-6.716			
(U) Program Adjustment				117.200
(U) FY 2004/2005 President's Budget:	252.634	270.255	240.695	237.819

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 2002 reflects a decrease of $6.716M for SBIR, and Congressional pro-rata reductions of $1.277. FY 2003 reflects Congressional pro-rata reductions of $6.512M and a Congressional increase of $4.675M. FY04 reflects inflation reductions and NWCF pricing adjustments. FY 2005 reflects inflation reductions, NWCF pricing adjustments, and an internal Marine Corps realignment of $117.2M.

(U) Schedule: AAAV program schedule is adjusted to add one year to accommodate robust Operational Testing necessary for a successful MS C, Low Rate Initial Production (LRIP) decision. Concurrently, LRIP moved from FY05 to FY06 and IOC is now planned for 2008.

(U) Technical: Not Applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY 2009	To Compl	Total Cost
(U) PANMC, BLI #147500, AAAV	-	0.000	0.000	2.536	5.824	9.470	28.275	14.419	399.771	460.295
(U) PMC BA2, BLI #202200, AAAV	-	16.490	97.915	67.896	240.320	267.451	545.568	829.742	6,191.165	8,256.547
(U) PMC BA7 (Spares), BLI (NA), AAAV	-	0.501	-	-	9.076	9.568	19.421	29.483	247.599	315.648
(U) PMC, AAAV Totals	-	16.991	97.915	67.896	249.396	277.019	564.989	859.225	6,438.764	8,572.195
(U) MILCON P-038	-	28.344	-	-	-	-	-	-	-	28.344
(U) MILCON P-042	-	-	-	-	-	10.647	-	-	-	10.647
(U) MILCON P-041	-	-	-	-	-	3.177	-	-	-	3.177
(U) MILCON P-1010	-	-	-	-	-	-	-	-	7.048	7.048
(U) REMAINING AAAV MCON	-	-	-	-	-	-	-	-	31.106	31.106
(U) MILCON, AAAV Totals	0.000	28.344	0.000	0.000	0.000	13.824	0.000	0.000	38.154	80.322

(U) Related RDT&E:

(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project C0021, AAV7A1.

(U) PE 0206623M (Marine Corps Ground Combat/Supporting Arms Systems), Project B2237, AVTD.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev. and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**	PROJECT NUMBER AND NAME: **B0020 Advanced Amphibious Assault Vehicle (AAAV)**

(U) D. 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 FY06. Following the LRIP decision review, LRIP vehicles will be developed in FY06 for use during Initial Operational Test and Evaluation (IOT&E). Initial Operational Capability (IOC) and Full Operational Capability (FOC) will occur in FY08 and FY18, 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 and simulation techniques which is intended to continue throughout SDD. As a Program Management Oversight for Life Cycle Support pilot program, the program office management strategy includes planning for life cycle support once the system is fielded to more efficiently manage and optimize operating and support requirements and reduce overall program cost.

The program's contracting approach for the 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. 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 recompeted 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.

(U) E. MAJOR PERFORMERS:

FY 02-07 - General Dynamics, Woodbridge, VA. Validation of manufacturing and production processes, fabrication and testing of SDD vehicles, and finalizing and implementing Life Cycle Management. Awarded Feb 01.

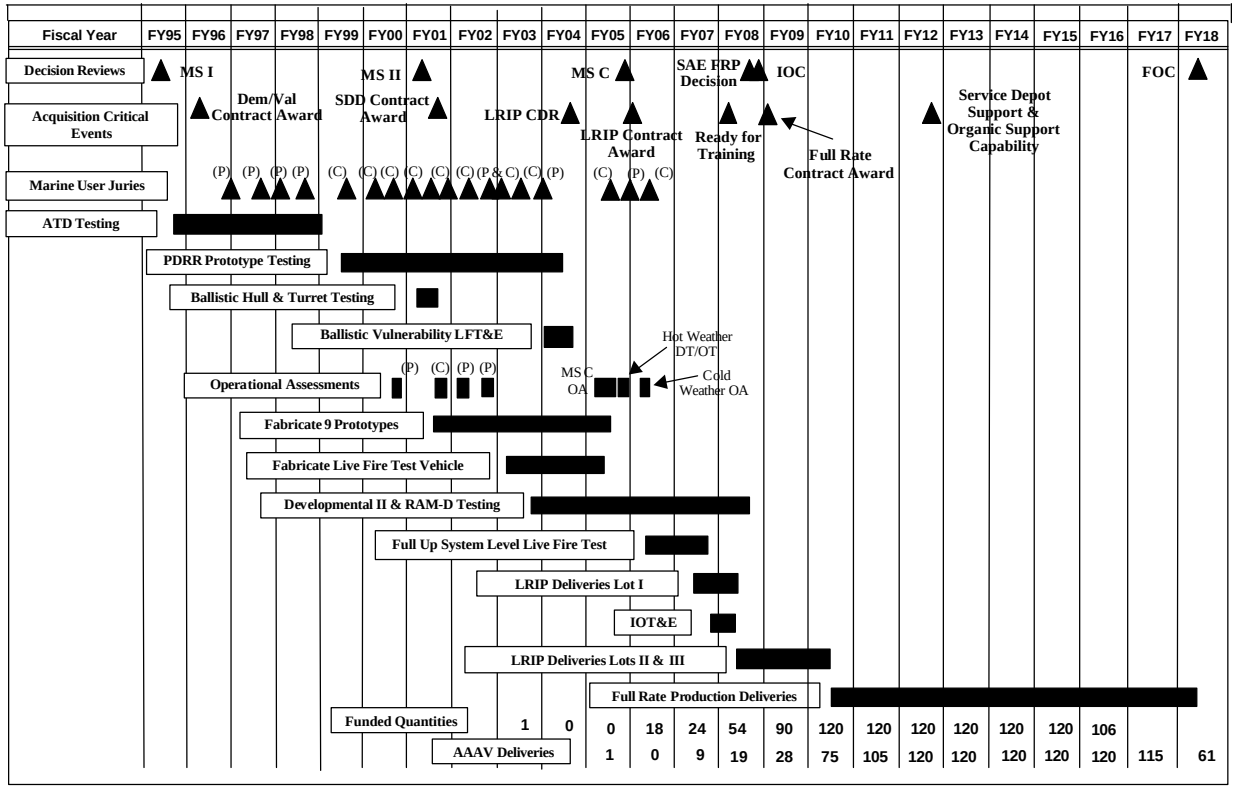
CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Development and Prototypes**			PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**					PROJECT NUMBER AND NAME **B0020 Advanced Amphibious Assault Vehicle (AAAV)**				
Cost Categories (Tailor to WBS, or Sys/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
PDRR Contract	CPAF	GDLS - PDRR Award	399.703							Cont	Cont	400.000
SDD Contract	CPAF	GDLS - SDD Award	258.012	243.424	1/	208.150	1/	188.773	1/	Cont	Cont	724.000
Subtotal Program Dev Spt			**657.715**	**243.424**		**208.150**		**188.773**		Cont	Cont	
Remarks: 1/ The SDD contract was definitized in July 2001. The SDD contract is for the entire SDD effort and is incrementally funded. Target value does not include one year extension for which a proposal has been requested.												
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Support		EG&G, Manassas, VA	18.357	4.471	2/	1.490	2/	1.487	2/	Cont	Cont	24.000
Program Support		Various Government Contracts	12.621	2.701	3/	2.722	3/	2.547	3/	Cont	Cont	
Training devices/simulators		Various Government Contracts	0.800	8.361	3/	8.385	3/	11.479	3/	Cont	Cont	
Subtotal Program Support			**31.778**	**15.533**		**12.597**		**15.513**		Cont	Cont	
Remarks: 2/ EG&G contract (FFP with options) was awarded August 1998 for contract performance thru 2003. 3/ Various contract award dates.												
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Testing		Various Locations	15.431	9.453	3/	15.018	3/	28.200	3/	Cont	Cont	
Subtotal T&E			**15.431**	**9.453**		**15.018**		**28.200**		Cont	Cont	
Remarks: 3/ Various contract award dates.												

CLASSIFICATION:

Exhibit R-3 Cost Analysis								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Development and Prototypes**			PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**					PROJECT NUMBER AND NAME **B0020 Advanced Amphibious Assault Vehicle (AAAV)**				
Cost Categories (Tailor to WBS, or System/Iter Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
In-house technical support		Various Government Labs	73.905	0.599	3/	3.684	3/	4.087	3/	Cont	Cont	
Mgmt & Prof Support		MITRE CORP, McClean, VA	7.739	1.246	1Q	1.246	1Q	1.246	1Q	Cont	Cont	
Subtotal Management			**81.644**	**1.845**		**4.930**		**5.333**		Cont	Cont	
Remarks: 3/ Various contract award dates.												
Total Cost			**786.568**	**270.255**		**240.695**		**237.819**		Cont	Cont	

Exhibit R-4/4a Schedule Profile/Detail		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Development and Prototypes	0603611M Marine Corps Assault Vehicles	B0020 Advanced Amphibious Assault Vehicle (AAAV)



Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) RDT&E,N	252.634	270.255	240.695	237.819	184.358	164.024	72.013	14.612	Cont	Cont
(U) PANMC, BLI #147500, AAAV	-	-	-	2.536	5.824	9.470	28.275	14.419	399.771	460.295
(U) PMC BA2, BLI #202200, AAAV	-	16.490	97.915	67.896	240.320	267.451	545.568	829.742	6,191.165	8,256.547
(U) PMC BA7, BLI #700000, AAAV	-	0.501	-	-	9.076	9.568	19.421	29.483	247.599	315.648
(U) PMC, AAAV TOTALS	-	16.991	97.915	67.896	249.396	277.019	564.989	859.225	6,438.764	8,572.195
(U) MILCON P-038	-	28.344	-	-		-	-	-	-	28.344
(U) MILCON P-042	-	-	-	-	-	10.647	-	-	-	10.647
(U) MILCON P-041	-	-	-	-	-	3.177	-	-	-	3.177
(U) MILCON P-1010	-	-	-	-	-	-	-	-	7.048	7.048
(U) REMAINING AAAV MILCON	-	-	-	-	-	-	-	-	31.106	31.106
(U) MILCON, AAAV TOTALS	-	28.344	0.000	0.000	0.000	13.824	0.000	0.000	38.154	80.322

Exhibit R-4/4a Schedule Profile/Detail		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Development and Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603611M Marine Corps Assault Vehicles**	PROJECT NUMBER AND NAME **B0020 Advanced Amphibious Assault Vehicle (AAAV)**

SCHEDULE DETAIL	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
MS C				4Q				
SAE FRP Decision							3Q	
IOC							4Q	
PDRR Prototype Testing	1-4Q	1-4Q	1-2Q					
Ballistic Vulnerability LFT&E			1-3Q					
Operational Assessments	1Q,4Q			2-4Q	2Q			
Fabrication of 9 Prototypes, Refurb 3 PDRR Prototypes	1-4Q	1-4Q	1-4Q	1-3Q				
Fabricate Live Fire Test Vehicle		2-4Q	1-4Q	1-2Q				
Developmental II & RAM-D Testing		4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-3Q	
LRIP CDR			3Q					
LRIP Contract Award					1Q			
Full Up System Level Live Fire Test					2-4Q	1-3Q		
LRIP Deliveries Lot I						3-4Q	1-2Q	
IOT&E						4Q	1-2Q	
Ready for Training							1Q	
LRIP Deliveries Lots II & III							2-4Q	1-4Q
Full Rate Contract Award								1Q

EXHIBIT R-2a, RDT&E Project Justification							DATE: Februrary 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT NUMBER AND NAME **0603612M Marine Corps Mine/Countermeasures Systems**					PROJECT NUMBER AND NAME **C2106 Advance Mine Detector**		
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY2009	Cost to Complete	Total Program
Project Cost	**0.000**	**0.486**	**1.215**	**6.032**	**6.251**	**3.724**	**0.641**	**0.000**	**0.000**	**18.349**
RDT&E Articles Qty			**12**							

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

The Advance Mine Detector (AMD) will be a man-portable system capable of detecting both metallic and nonmetallic buried mines regardless of fuse type. The AMD will alleviate a critical deficiency for detection of buried metallic and semi-metallic mines. Current mine detection technologies are only able to detect metallic mines. The Family of Explosive Ordnance Disposal (FEOD) mission is to provide a capability to neutralize the hazards associated with explosive ordnance that are beyond the normal capabilities of other specialties and present a threat to operations, installations, personnel and material. The FEOD Equipment accomplishes this mission by detecting, identifying, rendering safe, recovering, evacuating and disassembling, and/or disposing of unexploded ordnance with a variety of tools.

(U) ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.250**	**0.473**	**1.150**
RDT&E Articles Qty				

AMD: Facilitate program transition to Marine Corps Systems Command (MARCORSYSCOM) from Office of Naval Research (ONR). Provide program management, technical support, and travel.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.500**	**1.000**
RDT&E Articles Qty				

AMD: Conduct initial developmental testing and follow-up developmental testing in various soil types and environmental conditions of the AMD prototype to determine system capabilities.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.000**	**0.750**
RDT&E Articles Qty				

AMD: Update programmatic documentation and technical drawings. Development of technical manuals and training packages.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.236**	**0.217**	**3.132**
RDT&E Articles Qty				

AMD: Conduct Trade Studies to reduce power consumption/weight, improve detection depths, and sweep rate. Engineering and design studies to improve ergonomic characteristics, integrate human factors

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.025**	**0.000**
RDT&E Articles Qty				

FEOD: Conduct re-configuration studies on the EOD tool sets.

(U)Total $	0.000	0.486	1.215	6.032

EXHIBIT R-2a, RDT&E Project Justification		DATE: Februrary 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603612M Marine Corps Mine/Countermeasures Systems**	PROJECT NUMBER AND NAME **C2106 Advance Mine Detector**

PROJECT CHANGE SUMMARY:

	FY2002	FY2003	FY2004	FY2005
(U) FY 2003 President's Budget:				
(U) Adjustments from the President's Budget:	**0.000**	**0.497**	**5.881**	**5.754**
(U) Congressional/OSD Program Reductions		-0.011	-0.027	-0.130
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings			-4.639	0.408
(U) SBIR/STTR Transfer				
(U) Minor Affordability Adjustment				
(U) FY 2004 President's Budget:	**0.000**	**0.486**	**1.215**	**6.032**

CHANGE SUMMARY EXPLANATION:
(U) Funding: Change in FY04 and FY05 is due to the realignment of programs within the Marine Corps.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
PMC BLI 632500 Demo Support Sys Advanced Mine Detector	0.000	0.000	2.041	3.432	1.100	11.659	10.715	5.829	0.000	34.776

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY: By leveraging an exploratory technology program for mine detection, the Marine Corps will maintain active involvement in the AMD development during concept and technology development. A backpack prototype, configured to detect TNT, RDX, tetryl and metallic and semi-metallic mines, will be delivered 2nd quarter FY 05 for test and evaluation. The demonstrated technology will then transition into system development and demonstration phase for further development. A cost plus contract with negotiated contractor incentives in the areas of weight, sweep rate, and power consumption will be awarded. After completion of Milestone B, the program enters Low Rate Initial Production (LRIP). LRIP items will undergo Intial Operational Test and Evaluation in preparation for full rate production. The production phase will employ a fixed price production contract.

(U) SCHEDULE PROFILE: Not Applicable.

(U) E. MAJOR PERFORMERS:
FY03 - TBD Competetive Contract for program support
FY04 - ATC, Aberdeen, MD, Test Actvity for the AMD Prototypes
FY05 - TBD Competetive Contract for the Engineering and design support to improve ergonomic characteristics, integrate human factors and finalize overall system design.

Exhibit R-3 Cost Analysis										DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT **0603612M Marine Corps Mine/Countermeasures Sys**							PROJECT NUMBER AND NAME **C2106 Advance Mine Detector**				
Cost Categories	**Contract Method & Type**	**Performing Activity & Location**	**Total PY s Cost**	**FY 02 Cost**	**FY 02 Award Date**	**FY 03 Cost**	**FY 03 Award Date**	**FY 04 Cost**	**FY 04 Award Date**	**FY 05 Cost**	**FY 05 Award Date**	**Cost to Complete**	**Total Cost**	**Target Value of Contract**
Engineering & Design	TBD	TBD								1.132	2Q/05	Cont.	Cont.	
Systems Engineering	TBD	TBD								2.000	TBD	Cont.	Cont.	
Subtotal Product Dev			**0.000**	**0.000**		**0.000**		**0.000**		**3.132**		**Cont**	**Cont**	
Remarks:														
Cost Categories	**Contract Method & Type**	**Performing Activity & Location**	**Total PY s Cost**	**FY 02 Cost**	**FY 02 Award Date**	**FY 03 Cost**	**FY 03 Award Date**	**FY 04 Cost**	**FY 04 Award Date**	**FY 05 Cost**	**FY 05 Award Date**	**Cost to Complete**	**Total Cost**	**Target Value of Contract**
Engineering Spt	TBD	MCSC Quantico VA				0.236	2Q/03	0.217	1Q/04	1.150	1Q/05	Cont.	Cont.	
Engineering Spt (FEOD)	TBD	MCSC Quantico VA						0.025	2Q/04					
Subtotal Support			**0.000**	**0.000**		**0.236**		**0.242**		**1.150**		**Cont**	**Cont**	
Remarks:														
Cost Categories	**Contract Method & Type**	**Performing Activity & Location**	**Total PY s Cost**	**FY 02 Cost**	**FY 02 Award Date**	**FY 03 Cost**	**FY 03 Award Date**	**FY 04 Cost**	**FY 04 Award Date**	**FY 05 Cost**	**FY 05 Award Date**	**Cost to Complete**	**Total Cost**	**Target Value of Contract**
Testing	MIPR	Aberdeen Proving Grounds, MD						0.500	1Q/04	0.500	1Q/05	Cont.	Cont.	
Testing	MIPR	Yuma								0.500	TBD	Cont.	Cont.	
Subtotal T&E			**0.000**	**0.000**		**0.000**		**0.500**		**1.000**		**Cont**	**Cont**	
Remarks:														
Cost Categories	**Contract Method & Type**	**Performing Activity & Location**	**Total PY s Cost**	**FY 02 Cost**	**FY 02 Award Date**	**FY 03 Cost**	**FY 03 Award Date**	**FY 04 Cost**	**FY 04 Award Date**	**FY 05 Cost**	**FY 05 Award Date**	**Cost to Complete**	**Total Cost**	**Target Value of Contract**
Management Spt	TBD	BAE				0.250	2Q/03	0.473	1Q/04	0.750	1Q/05	Cont.	Cont.	
Subtotal Management			**0.000**	**0.000**		**0.250**		**0.473**		**0.750**		**Cont**	**Cont**	
Remarks:														
Total Cost			**0.000**	**0.000**		**0.486**		**1.215**		**6.032**		**Cont**	**Cont**	

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: **February 2003**				
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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**33.934**	**31.059**	**19.700**	**20.612**	**11.961**	**5.046**	**2.893**	**2.932**	**Cont**	**Cont**
C1964 Anti-Armor Weapon System	**0.577**	**0.868**	**0.762**	**0.498**	**0.505**	**0.510**	**0.525**	**0.535**	**Cont**	**Cont**
C2112 Lightweight 155mm Howitzer (LW155)	**14.558**	**11.367**	**5.828**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**31.753**
C2256 Integrated Infantry Combat System	**1.161**	**1.740**	**1.682**	**1.692**	**1.577**	**1.606**	**1.655**	**1.688**	**Cont**	**Cont**
C2507 Family of Small Craft	**3.075**	**1.042**	**1.077**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**5.194**
C2508 Internally Transportable Vehicle (ITV)	**2.229**	**1.945**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**4.174**
C2614 SMAW Follow-On	**0.000**	**10.185**	**10.351**	**18.422**	**9.879**	**2.930**	**0.713**	**0.709**	**0.000**	**53.189**
C2998 Innovative Stand-Off Door Breaching Munition	**0.000**	**2.445**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**2.445**
C9116 Nanoparticles Neutralization of Facility Threats	**12.334**	**1.467**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**13.801**
Quantity of RDT&E Articles										

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

This PE supports the demonstration and validation of Marine Corps Ground/Supporting Arms Systems for utilization in Marine Air-Ground Expeditionary Force amphibious operations.

This program is funded under DEMONSTRATION & VALIDATION because it develops and integrates hardware for experimental test related to specific ground weapon system.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Demonstration/Validation**	PROGRAM ELEMENT (PE) NAME AND NO. **0603635M Marine Corps Ground Combat/Supporting Arms Systems**

B. PROGRAM CHANGE SUMMARY

	FY2002	FY2003	FY2004	FY2005
(U) FY 2003 President's Budget:	34.894	27.777	20.680	21.388
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reductions	-0.123	-0.718	-0.749	-0.741
(U) Congressional Rescissions				
(U) Congressional Increases		4		
(U) Reprogrammings	-0.289		-0.255	-0.088
(U) SBIR/STTR Transfer	-0.548			
(U) Minor Affordability Adjustment			0.024	0.053
(U) FY 2004 OSD Budget:	33.934	31.059	19.700	20.612

CHANGE SUMMARY EXPLANATION:
(U) Funding: See Above. (See R-2a exhibits for breakout at project level).
(U) Schedule:
(U) Technical:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**				PROJECT NUMBER AND NAME **C1964 Anti-Armor Weapon System**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.577**	**0.868**	**0.762**	**0.498**	**0.505**	**0.510**	**0.525**	**0.535**	**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) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.222**	**0.248**	**0.000**	**0.000**
RDT&E Articles Qty				

Engineering/technical support to participate in technical developments in the Javelin program.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.340**	**0.388**	**0.366**	**0.309**
RDT&E Articles Qty				

Engineering/technical support to participate in technical developments in the AAWS-H program.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.015**	**0.232**	**0.189**	**0.189**
RDT&E Articles Qty				

Program Office support for the AAWS-H program.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.207**	**0.000**
RDT&E Articles Qty				

Conduct evaluation of Analysis of Alternatives (AOA) identified AAWS-H solution.

(U)Total $	0.577	0.868	0.762	0.498

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C1964 Anti-Armor Weapon System**

(U) Project Change Summary:	**FY 2002**	**FY 2003**	**FY 2004**	**FY 2005**
(U) FY2003 President's Budget:	**0.624**	**0.888**	**0.824**	**0.544**
(U) Adjustments to Previous President's Budget:				
(U) Congressional/OSD Program Reductions	-0.002	-0.020	-0.062	-0.046
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	-0.029			
(U) SBIR/STTR Transfer	-0.016			
(U) Minor Affordability Adjustment				
(U) FY2004 President's Budget:	**0.577**	**0.868**	**0.762**	**0.498**

CHANGE SUMMARY EXPLANATION:
(U) Funding: See Above.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) PMC BLI# 301100 JAVELIN	0.997	1.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.023
(U) PMC BLI# 301700 AAWS-H	0.000	0.000	0.000	0.000	33.985	40.526	17.223	0.000	0.000	91.734

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

AAWS-H - The acquisition strategy anticipates a Competitively 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 fiscal years 2000-2003.

(U) E. MAJOR PERFORMERS:

FY 02 to completion - NSWC Dahlgren, VA. Engineering and technical support.
FY 04 - TBD. Evaluation of AAWS-H solution.

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**				PROJECT NUMBER AND NAME **C2112 Lightweight 155mm Howitzer (LW155)**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**14.558**	**11.367**	**5.828**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**31.753**
RDT&E Articles Qty	**2**									

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

(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.

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)/BAE Systems 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.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.944**	**1.500**	**0.828**	**0.000**
RDT&E Articles Qty				

Program Management Support.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.764**	**2.367**	**0.000**	**0.000**
RDT&E Articles Qty				

ARDEC matrix development engineering to system, logistics, safety, and quality assurance.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**7.750**	**4.000**	**2.000**	**0.000**
RDT&E Articles Qty				

EMD Contract Test Support (BAE Systems)

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.100**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Joint Operational Assessment

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M Marine Corps Ground Combat/Supt Arms**	**C2112 Lightweight 155mm Howitzer (LW155)**

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.900**	**0.000**	**2.000**	**0.000**
RDT&E Articles Qty				

Yuma Proving Ground Test Support

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.100**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	2			

Pre-production Planning/Manufacturing/Integration (Pilot Production Guns).

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**3.500**	**0.000**	**0.000**
RDT&E Articles Qty				

Developmental testing pilot production guns

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**1.000**	**0.000**
RDT&E Articles Qty				

MOTE Test Support

(U)Total $	0.000	14.558	11.367	5.828	0.000

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2112 Lightweight 155mm Howitzer (LW155)**

(U) Project Change Summary:

	FY 2002	FY 2003	FY 2004	FY 2005
(U) FY2003 President's Budget	**13.085**	**11.633**	**5.970**	**0.000**
(U) Adjustments to Previous President's Budget				
(U) Congressional/OSD Program Reductions	-0.036	-0.266	-0.142	
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	1.705			
(U) SBIR/STTR Transfer	-0.196			
(U) Minor Affordability Adjustments				
(U) FY2004 President's Budget	**14.558**	**11.367**	**5.828**	**0.000**

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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) PMC, BLI #218500, Howitzer, Medium Towed 155MM	0.000	62.020	111.489	175.543	177.071	73.585	0.000	0.000	0.000	599.708

(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 cost contract (no fee) in Dec 00 (Retroactive to Jun 00). Production contract for the LRIP buys in FY 03/04 is multiyear fixed price contract. FY 05-07 costs are based on the assumption of a planned joint multiyear procurement with the Army for the full rate production contract.

(U) D. MAJOR PERFORMERS:

FY 02-04 - BAE Systems, UK LW155 Howitzer Development to included Towed Artillery Digitization Integration. Feb 02, Oct 02, Oct 03.

FY 02-04 - LW155 Program Office, Picatinny Arsenal NJ LW155 Howitzer Development to included Towed Artillery Digitization Integration. Oct 01, Oct 02, Oct 03.

FY 03-04 - Yuma Proving Grounds, AZ Developmental Test and Evaluation. Oct 02, Oct 03.

FY 04 - Marine Corps Operational Test & Evaluation (MCOTEA) Quantico VA. Oct 03.

CLASSIFICATION:

Exhibit R-3 Cost Analysis

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M Marine Corps Ground Combat/Supt Arms**	**C2112 Lightweight 155mm Howitzer (LW155)**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development														
Primary Hardware Dev	CPIF	BAE Systems, UK	37.466	7.750	02/02	0.000		0.000		0.000		0.000	45.216	
Ancillary Hardware Dev	CPIF	Kara, Bedford, PA	2.920	0.000		0.000		0.000		0.000		0.000	2.920	
Award Fees	CPIF	BAE Systems, UK	0.316	0.000		0.000		0.000		0.000		0.000	0.316	
Mfg &Integr for Risk Mitig	CPIF	BAE Systems, UK	0.000	1.100	02/02	0.000		0.000		0.000		0.000	1.100	
GFE	MIPR	Benet Labs Watervliet Ars NY	14.250	0.000		0.000		0.000		0.000		0.000	14.250	
Govt Dev Eng	MIPR	ARDEC Picatinny NJ	11.776	1.764	10/01	2.367	10/02	0.000		0.000		0.000	15.907	
Govt Dev Eng	MIPR	Misc	9.884	0.000		0.000		0.000		0.000		0.000	9.884	
Subtotal Product Dev			76.612	10.614		2.367		0.000		0.000		0.000	89.593	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support														
Support Contracts	Contract	Various	2.699	0.000		0.000		0.000		0.000		0.000	2.699	
Subtotal Support			2.699	0.000		0.000		0.000		0.000		0.000	2.699	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**

PROGRAM ELEMENT: **0603635M Marine Corps Ground Combat/Supt Arms**

PROJECT NUMBER AND NAME: **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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test & Eval (T&E)														
Developmental Test & Eval	MIPR	Yuma Prov Grd, Yuma, AZ	8.474	0.900	10/01	3.500	01/03	2.000	10/03			0.000	14.874	
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	1.100	10/01	0.000		0.000				0.000	1.100	
Operational Test & Eval	MIPR	MCOTEA Quantico VA	1.101	0.000		0.000		1.000	10/03			0.000	2.101	
Test Support	CPIF	BAE Systems, United Kingdom	0.000	0.000		4.000	10/02	2.000	10/03			0.000	6.000	
Subtotal T&E			13.007	2.000		7.500		5.000		0.000		0.000	27.507	

Remarks:

Cost Categories (Tailor to WBS, or Sys/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	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Mngmnt														
Program Mngmnt	MIPR	PMO LW155, Picatinny, NJ	14.727	1.944	10/01	1.500	10/02	0.828	10/03			0.000	18.999	
Subtotal Management			14.727	1.944		1.500		0.828		0.000		0.000	18.999	

Remarks:

Total Cost			107.045	14.558		11.367		5.828		0.000		0.000	138.798	

Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT **0603635M Marine Corps Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2112 Lightweight 155mm Howitzer (LW155)**

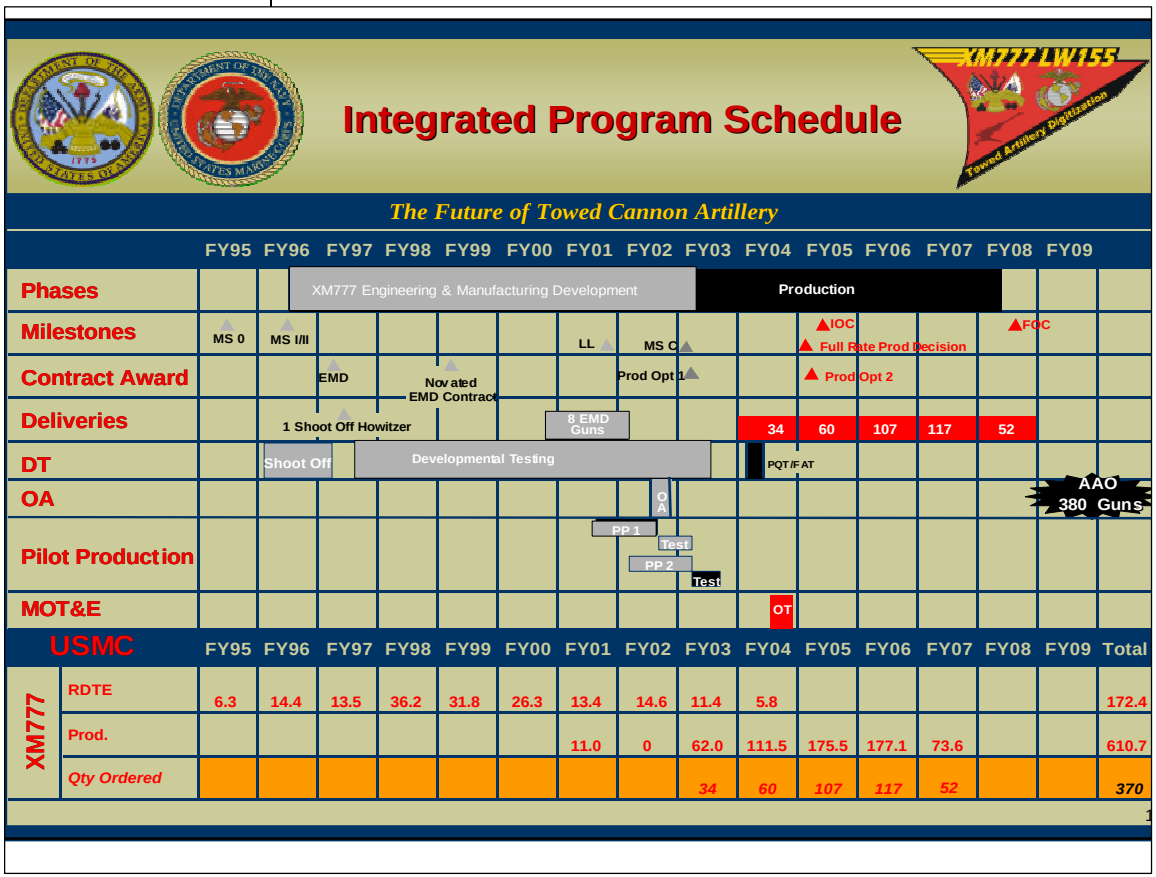


Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT **0603635M Marine Corps Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2112 Lightweight 155mm Howitzer (LW155)**

LW155 SCHEDULE DETAIL	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Complete Development Testing (EMD Guns)	2 Q							
Operational Assessment	3 Q							
Pilot Production (PP) Guns(Qty 2)	4 Q	1 Q						
Milestone C		1 Q						
LRIP Contract Award		1 Q						
Complete Development Testing (PP Guns)		2 Q						
MOT&E			4 Q					
Full Rate Production Decision				1 Q				
IOC				2 Q				
FOC							4 Q	

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			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 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**1.161**	**1.740**	**1.682**	**1.692**	**1.577**	**1.606**	**1.655**	**1.688**	**Cont**	**Cont**
RDT&E Articles Qty										

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

(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 and 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. The program will leverage joint technologies but baseline the Marine infantryman's unique items that are worn, carried or consumed.

(U) ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.369**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Developed platoon & company infantry capabilities assessment model

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.154**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Developed and executed the18 hour Assault Amphibious Vehicle South West Asia (AAV SWA) Vignette Model

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.638**	**0.911**	**0.883**	**0.978**
RDT&E Articles Qty				

Program management, specialized engineering and technical support

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.600**	**0.600**	**0.000**
RDT&E Articles Qty				

Modeling and Simulation (M&S) scenario development to refine and validate models for assessing IICS efforts (Military Operations in Urban Terrain (MOUT) & Jungle Vignettes; and Mountain and Nuclear, Biological and Chemical (MNTN & NBC) environment vignettes.)

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.229**	**0.199**	**0.000**
RDT&E Articles Qty			**1**	

Development of prototype working integration issues with the development of combat gear (Soldier and Biological Chemical Command (SBCCOM) Natick, MA)

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.000**	**0.714**
RDT&E Articles Qty				

Product Development and integration efforts.

(U) Total $	0.000	1.161	1.740	1.682	1.692

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M Marine Corps Ground Combat/Supt Arms**	**C2256 Integrated Infantry Combat System (IICS)**

(U) PROJECT CHANGE SUMMARY:	**FY2002**	**FY2003**	**FY2004**	**FY2005**
(U) FY 2003 President's Budget:	**1.728**	**1.779**	**1.799**	**1.814**
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reductions	-0.005	-0.039	-0.117	-0.122
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	-0.531			
(U) SBIR	-0.031			
(U) Minor Affordability Adjustment				
(U) FY 2004 President's Budget:	**1.161**	**1.740**	**1.682**	**1.692**

CHANGE SUMMARY EXPLANATION:
(U) Funding: See Above.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

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

(U) Related RDT&E: (U) PE 0602131M (Marine Corps Landing Force Technology)
(U) PE 0603640M (Marine Corps Advanced Technology Demonstration)
(U) PE 0604657A (US Army Land Warrior Program)

(U) C. ACQUISITION STRATEGY: The Intergrated Infantry Combat System is a phased approach of enhancements to the rifle squad with an endstate of a "system." Modularity and integration are paramount design factors. 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) E. MAJOR PERFORMERS:

Oct 02, Oct 03 - Concurrent Technologies Corporation, Johnstown, PA - Producing a technology roadmap for Marine infantry equipment.
Oct 04 - TBD. Product development and integration efforts.
May 02 - SAIC Corp, Dumfries, VA. Producing the ICAM model which models relative worth of different Marine infantry equipment.
Feb 02, Oct 02, Oct 03, Oct 04 - NSWC Dahlgren, VA. Specialized engineering and technical support.
Feb 03, Oct 03, Oct 04 - BAE Inc., Stafford, VA. Program management and technical support.

(U) SCHEDULE PROFILE: Not Applicable.

Exhibit R-3 Cost Analysis										DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, 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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	MIPR	CTC, Johnstown, PA	0.194	0.100	11/01	0.600	10/02	0.600	10/03			0.000	1.494	
Product Development	MIPR	SBCCOM, NATICK, MA	0.125			0.229	10/02	0.199	10/03			Cont.	Cont.	
Product Development	MIPR	TBD								0.714	10/04	Cont.	Cont.	
Product Development	MIPR	SAIC Corp, Dumfries, VA	0.449	0.304	05/02							Cont.	Cont.	
Product Development	RCP	WB&B, Dumfries, VA		0.119	05/02							0.000	0.119	
Product Development	RCP	Various	1.704									Cont.	Cont.	
Subtotal Product Dev			2.472	0.523		0.829		0.799		0.714		Cont.	Cont.	
Remarks:														
Cost Categories (Tailor to WBS, or System/Iter 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	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUPPORT														
Program Support	WR	NSWC DAHLGREN, VA	0.224	0.295	02/02	0.300	10/02	0.300	10/03	0.300	10/04	Cont.	Cont.	
Program Support	RCP	ALS, Inc., Dumfries, VA	0.136									0.000	0.136	
Program Support	RCP	SAIC, Inc., Dumfries, VA		0.170	11/02	0.150	10/02	0.150	10/03	0.150	10/04	Cont.	Cont.	
Program Support	RCP	BAE, Inc., Stafford, VA				0.261	02/03	0.233	10/03	0.328	10/04	Cont.	Cont.	
Program Support	RCP	BAE, Inc., Stafford, VA	0.136	0.119	10/01	0.150	10/02	0.150	10/03	0.150	10/04	Cont.	Cont.	
Subtotal Support			0.496	0.584		0.861		0.833		0.928		Cont.	Cont.	
Remarks:														
Cost Categories (Tailor to WBS, or System/Iter 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	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		Cont.	Cont.	
Remarks:														
Cost Categories (Tailor to WBS, or System/Iter 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	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Prog Mgmt Spt	RCP	BAE, Inc. Stafford, VA	0.068									Cont.	Cont.	
Travel	WR	MCSC, Quantico, VA	0.056	0.054	10/01	0.050	10/02	0.050	10/03	0.050	10/04	Cont.	Cont.	
Subtotal Management			0.124	0.054		0.050		0.050		0.050		Cont.	Cont.	
Remarks:														
Total Cost				1.161		1.740		1.682		1.692		Cont.	Cont.	

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**				PROJECT NUMBER AND NAME **C2507 Family of Small Craft**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**3.075**	**1.042**	**1.077**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**5.194**
RDT&E Articles Qty	**3**									

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

(U) The Light Strike Craft (LSC) - **to be renamed Small Craft Engine** 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. A small number of CRRCs will be retained by reconnaissance forces for helicopter and submarine operations.

(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) which was fielded 12 years ago. It will augment the larger Riverine Assault Craft (RAC) in riverine operations to include troop transport, troop insertion, and extraction, convoy operations, and application of fires. During the production of the SURC, we will execute an engineering change proposal for some minor top side configuration changes on the SURC to achieve the SURC-Escort variant .

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.270**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Designed and tested mobility support equipment for use with the Landing Craft Air Cushioned (LCAC), CH-53 Helicopter, Sealift.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**2.500**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	3			

Fabricated Operational Test (OT) prototype craft.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.280**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Operational Test and Eval/ Certification and safety testing of 3 SURC prototypes.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.025**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Program support.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.093**	**0.000**	**0.000**
RDT&E Articles Qty				

Certification DT and OT testing of SURC Prototypes.

EXHIBIT R-2a, RDT&E Project Justification				DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)		**0603635M Marine Corps Ground Combat/Supt Arms**		**C2507 Family of Small Craft**
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.083**	**0.000**	**0.000**
RDT&E Articles Qty				

Test small craft engine.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.866**	**0.244**	**0.000**
RDT&E Articles Qty				

Fabrication of small craft engine prototype/developmental testing.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.130**	**0.000**
RDT&E Articles Qty				

Operational Test and Eval/Certification and safety testing for the small craft engine SURC-E (Escort Variant)

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.703**	**0.000**
RDT&E Articles Qty				

System modifications/reconfiguration for top-side of the boat to prototype the SURC-E (Escort Variant).

(U) Total $	3.075	1.042	1.077	0.000

(U) PROJECT CHANGE SUMMARY:

	FY2002	**FY2003**	**FY2004**	**FY2005**
(U) FY 2003 President's Budget:	**2.904**	**1.065**	**1.648**	**1.710**
(U) Adjustments from the President's Budget:	-0.010	-0.023	-0.079	
(U) Congressional Program Reductions				
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings	0.236		-0.491	-1.710
(U) SBIR/STTR Transfer	-0.055			
(U) Minor Affordability Adjustment			-0.001	
(U) FY 2004 NAVCOMPT Budget:	**3.075**	**1.042**	**1.077**	**0.000**

CHANGE SUMMARY EXPLANATION:

(U) Funding: Change in funding is due to the realignment of programs within the Marine Corps.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M Marine Corps Ground Combat/Supt Arms**	**C2507 Family of Small Craft**

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) PMC BLI#643400 Amphib Raid Equip	2.267	21.835	21.404	30.394	18.968	6.696	3.458	3.521	Continuing	Continuing

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

The acquisition strategy consists of a market survey to identify Off-The-Shelf / Non-Developmental Item baseline competitors for the SURC. This was followed by a release of desired capabilities/specifications and establishment of the trade space parameters. The offerors were evaluated and one builder was selected. The program is testing three production representative craft.

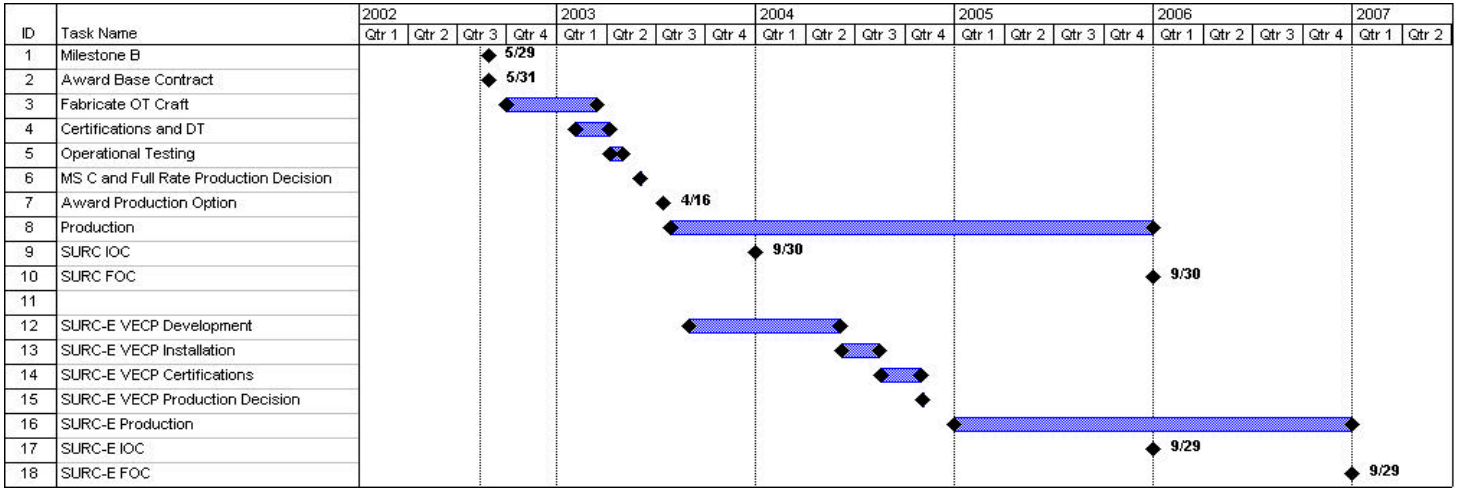
(U) E. MAJOR PERFORMERS:

May 02, Oct 02 - Raytheon Company, Poulsboro, WA. Fabricated operational test prototype craft
FY 04 - NSWC Carderock, Suffolk, VA. System modifications/reconfiguration for top-side of the boat to prototype the SURC Escort variant.
Oct 03 - BAE Inc, Stafford, VA. Fabrication of small craft engine prototype/developmental testing.

Exhibit R-3 Cost Analysis									DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT **0603635M MC Ground Combat/Supt Arms**						PROJECT NUMBER AND NAME **C2507 Family of Small Craft**					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Dev	RCP	Raytheon, Poulsboro, WA		2.500	05/02	0.866	03/03					0.000	3.366	
Systems Engineering	WR	NSWC Carderock, Suffolk,VA	1.744	0.270	10/01			0.703	01/04			Cont.	Cont.	
Systems Engineering	WR	NSWC Carderock, Suffolk,VA	0.310									Cont.	Cont.	
Subtotal Product Dev			2.054	2.770		0.866		0.703		0.000		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Integ Logistics Support	RCP	BAE Inc., Stafford, VA	0.169	0.280	10/01	0.083	03/03	0.244	10/03			Cont.	Cont.	
Subtotal Support			0.169	0.280		0.083		0.244		0.000		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Eval	WR	NSWC CARDEROCK				0.093	01/03					0.000	0.093	
Operational Test & Eval	WR	MCOTEA, QUANTICO, VA						0.130	01/04			0.000	0.130	
Subtotal T&E			0.000	0.000		0.093		0.130		0.000		0.000	0.223	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Support	WR	QUANTICO, VA		0.025	10/01							0.000	0.025	
Subtotal Management			0.000	0.025		0.000		0.000		0.000		0.000	0.025	
Remarks:														
Total Cost				3.075		1.042		1.077		0.000		Cont.	Cont.	

Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M MC Ground Combat/Supt Arms**	**C2507 Family of Small Craft**

SURC



(Note: IOC occurs in FY 2003. FOC occurs in FY 2005.)

Program Funding Summary (APPN, BLI #, NOMEN)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) RDT&E,N	3.075	1.042	1.077	0.000	0.000	0.000	0.000	0.000	0.000	5.194
(U) PMC,BLI#643400,Amphib Raid Equip (SURC)	0.000	12.348	12.202	12.781	7.853	0.000	0.000	0.000	0.000	45.184

Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT **0603635M MC Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2507 Family of Small Craft**

SURC SCHEDULE DETAIL	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
MILESTONE B	3Q							
OT		2Q						
MILESTONE C		2Q						
PRODUCTION		3Q						
SURC IOC		4Q						
SURC FOC				4Q				
SURC-E VECP DEVELOPMENT		3Q						
PRODUCTION DECISION			4Q					
PRODUCTION			4Q					
SURC-E IOC				4Q				
SURC-E FOC					4Q			

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**			PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**				PROJECT NUMBER AND NAME **C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**0.000**	**10.185**	**10.351**	**18.422**	**9.879**	**2.930**	**0.713**	**0.709**	**0.000**	**53.189**
RDT&E Articles Qty										

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

Follow-On To 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.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

FY01 forward financed activities were continued in FY02. These efforts included development of a door breaching round, a wall breaching round, a conceptual firing device, and fire from enclosure propulsion.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**6.250**	**0.000**	**0.000**
RDT&E Articles Qty				

System integration, concept and technical development

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**1.266**	**0.000**	**0.000**
RDT&E Articles Qty				

Conduct systems testing and evaluation in support of source selection for phase B

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.629**	**0.955**	**1.500**
RDT&E Articles Qty				

Provide government program management / in-house support

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.100**	**0.100**	**0.140**
RDT&E Articles Qty				

Travel/Temporary Additional Duty (TAD)

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.990**	**1.000**	**1.920**
RDT&E Articles Qty				

Provide government engineering and technical support

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**		PROJECT NUMBER AND NAME **C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on**

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.950**	**0.000**	**0.000**
RDT&E Articles Qty				

Tri-mode fuze technology demonstration

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**8.296**	**14.562**
RDT&E Articles Qty				

System development and demonstration

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**0.000**	**0.300**
RDT&E Articles Qty				

Initial operational test and evaluation (IOT&E) preparatory work

(U) Total $	0.000	0.000	10.185	10.351	18.422

(U) PROJECT CHANGE SUMMARY:

	FY2002	**FY2003**	**FY2004**	**FY2005**
(U) FY 2003 President's Budget:	**0.000**	**10.423**	**10.439**	**16.822**
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reductions		-0.238	-0.114	1.547
(U) Congressional Rescissions				
(U) Congressional Increases				
(U) Reprogrammings				
(U) SBIR/STTR Transfer			0.026	0.053
(U) Minor Affordability Adjustment				
(U) FY 2004 President's Budget:	**0.000**	**10.185**	**10.351**	**18.422**

CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding changes resulted from External and OSD Marks during PB04.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT NUMBER AND NAME **0603635M Marine Corps Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2614 Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) Follow-on**

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) PMC 301600 Follow On To SMAW	0.000	0.000	0.000	0.000	4.663	2.439	2.373	1.703	Continuing	Continuing
(U) PANMC 147100 Follow On To SMAW	0.000	0.000	0.000	0.000	50.159	70.137	59.071	118.933	Continuing	Continuing

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

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.

(U) E. MAJOR PERFORMERS:

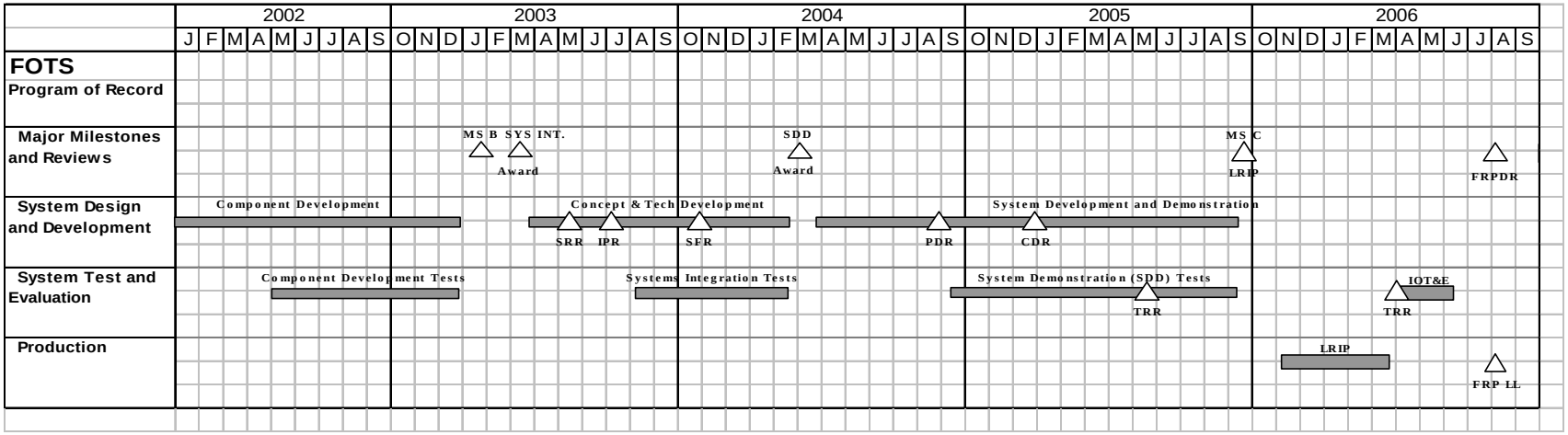
Feb 03, Apr 03 - TBD. System integration.

Oct 04 - TBD. System development and demonstration.

Exhibit R-3 Cost Analysis										DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**				PROGRAM ELEMENT **0603635M MC Ground Combat/Supt Arms**						PROJECT NUMBER AND NAME **C2614 SMAW Follow-on**				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	SS/CPAF	CMS Defense Sys,Titusville,FL	4.000									0.000	4.000	
Product Development	SS/CPAF	InvenCom Inc., Charlotte, NC	1.300									0.000	1.300	
Product Development	SS/CPAF	Raphael, USA	0.600									0.000	0.600	
System Integration	C/CPAF	TBD Contractor				7.000	02/03	7.531	04/03			0.000	14.531	
System Devel & Demo	SS/CPAF	TBD Contractor								14.562	10/04	0.000	14.562	
Product Development	C/CPAF	TBD Contractor				0.950	10/02					0.000	0.950	
LRIP	SS/FFP	TBD Contractor										Cont.	Cont.	
Subtotal Product Dev			5.900	0.000		7.950		7.531		14.562		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Program Support	WR	NSWC, Dahlgren, VA	2.577			0.752	10/02	0.580	10/03	1.300	10/04	Cont.	Cont.	
Program Support	WR	NAVSEA, Indian Head, MD	0.501									0.000	0.501	
Program Support	C/IDIQ	Telecolote Inc., Huntsville, AL	0.124			0.075	10/02	0.075	10/03	0.075	10/04	Cont.	Cont.	
Program Support	C/CPIF	ALS, Inc. Dumfries, VA	0.027									0.000	0.027	
Program Support	C/FFP	BAE Systems, Stafford, VA	0.000			0.400	10/02	0.375	10/03	0.545	10/04	Cont.	Cont.	
Subtotal Support			3.229	0.000		1.227		1.030		1.920		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Operational T&E	VARIOUS	TBD								0.300	10/04	Cont.	Cont.	
Developmental Test & Eval	VARIOUS	TBD				0.279	07/03	0.875	10/03			0.000	1.154	
Subtotal T&E			0.000	0.000		0.279		0.875		0.300		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Management Support	WR	MCSC, Quantico, VA	0.406			0.729	10/02	0.915	10/03	1.640	10/04	Cont.	Cont.	
Subtotal Management			0.406	0.000		0.729		0.915		1.640		Cont.	Cont.	
Remarks:														
Total Cost				**0.000**		**10.185**		**10.351**		**18.422**		**Cont.**	**Cont.**	

Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)	**0603635M MC Ground Combat/Supt Arms**	**C2614 SMAW Follow-on**

FOLLOW ON TO SMAW (FOTS)



Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) RDT&E,N	0.000	10.185	10.351	18.422	9.879	2.930	0.713	0.709	Continuing	Continuing
(U) PMC 301600 Follow On To SMAW	0.000	0.000	0.000	0.000	4.663	2.439	2.373	1.703	Continuing	Continuing
(U) PANMC 147100 Rockets All Types (FOTS)	0.000	0.000	0.000	0.000	50.159	70.137	59.071	118.933	Continuing	Continuing

Exhibit R-4/4a Schedule Profile/Detail		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Advanced Component Dev & Prototypes (ADCP&P)**	PROGRAM ELEMENT **0603635M MC Ground Combat/Supt Arms**	PROJECT NUMBER AND NAME **C2614 SMAW Follow-on**

FOTS SCHEDULE DETAIL	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone B		2Q						
System Integration		2Q						
System Design and Development			2Q					
System Test and Evaluation		4Q	1-2Q	1-4Q				
Milestone C				4Q				
Production				4Q	1-4Q			
IOT&E					3Q			
FRP					4Q	1-4Q	1-4Q	1-4Q
IOC						4Q		

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**						R-1 ITEM NOMENCLATURE 0603654N/Joint Service EOD Development					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost		**12.356**	**12.589**	**12.385**	**15.632**	**16.538**	**17.721**	**19.775**	**19.472**	**Continuing**	**Continuing**
Q0377/Joint Service EOD Systems		**5.811**	**5.981**	**4.579**	**6.602**	**7.580**	**8.567**	**9.397**	**10.565**	**Continuing**	**Continuing**
Q1317/EOD Diving System		**6.545**	**6.608**	**7.806**	**9.030**	**8.958**	**9.154**	**10.378**	**8.907**	**Continuing**	**Continuing**
Quantity of RDT&E Articles		**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**		**0**

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

This is a Joint Service Program. This program provides for the development of Explosive Ordnance Disposal tools and equipment for use by all military services. The responsibility is assigned to the Navy as single service manager, by Department of Defense Directive 5160.62 of 26 April 1989, for management of the Joint Service Explosive Ordnance Disposal Research and Development Program. Proliferation of sophisticated types of foreign and domestic ordnance 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.

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q0377/Joint Service EOD Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**5.811**	**5.981**	**4.579**	**6.602**	**7.580**	**8.567**	**9.397**	**10.565**
RDT&E Articles Qty	**Various**	**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).

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q0377/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.327	1.323	0.928	2.154
RDT&E Articles Quantity	Various	Various	Various	Various

Develop EOD detection, identification and knowledge systems to include, the Non-Invasive Filler Identification (NFI) project, the Electronic Safe/Arm Monitor project, and the Joint EOD Knowledge Technology Operational Demonstration Advanced Concept Technology Demonstration (JEOD-KTOD ACTD) project. Also, conduct Analysis of Alternatives and conduct evaluations of Commercial/Non-Developmental Item (C/NDI EOD tools/equipment).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.696	2.578	2.333	3.314
RDT&E Articles Quantity	Various	Various	Various	Various

Develop access, disruption and neutralization systems to include, the Large IED Access and Disruption project, the Submunition Clearance project, the Low Order Tools project, and the Electronic Safe/Arm Jammer. Also, conduct Analysis of Alternatives and conduct evaluations of Commercial/Non-Developmental Item (C/NDI EOD tools/equipment).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.988	1.400	0.818	0.634
RDT&E Articles Quantity	Various	Various	Various	Various

Develop remote systems to include the EOD Man Portable Robotics Program (MPRS) project.

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q0377/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.800	0.680	0.500	0.500
RDT&E Articles Quantity	Various	Various	Various	Various

Develop Classified Project II and Classified Project III.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various	Various

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity	Various	Various	Various	Various

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q0377/Joint Service EOD Systems	

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 03 Pres Controls):	6.015	6.120	6.268	6.405
Current BES/President's Budget (FY 04 President Controls):	5.811	5.981	4.579	6.602
Total Adjustments	-0.204	-0.139	-1.689	0.197
Summary of Adjustments				
Miscellaneous Adjustment	-0.204	0.139	-1.689	0.197
Subtotal	-0.204	0.139	-1.689	0.197

(U) Schedule:

Based on the IPR for the Large IED Access & Disruption project, the testing phase of one of the developmental items will be extended and the production decision will be moved to FY05. After a review of the status of technology base efforts in the area, the Analysis of Alternative (and subsequent project) for the Electronic Safe/Arm Monitor has been delayed by one year. The Analysis of Alternatives conducted for the Advanced Ordnance Locator (AOL) concluded that technology was not available to provide a significant increase in the underground ordnance location capability of the EOD technician. Therefore, the planned AOL acquisition project was not initiated. Based on direction by CNO N757, the FY03 funding was redirected to higher priority projects. The FY04/05 funding was reduced based on issue 66445, Post-Production R&D Continuation.

Not applicable.

(U) Technical:

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q0377/Joint Service EOD Systems

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN 5509	537	358	164	1730	6600	4430	4700	5100	Continuing	Continuing

(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

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.

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

(U) F. MAJOR PERFORMERS: **

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD in FY02 through FY05. The funding is used for developing Joint Service EOD tools/equipment. The funding document will be issued as follows: FY03-10/02; FY04-10/03; FY05-10/04.

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q0377/Joint Service EOD Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTD, IH, MD	79.412	1.644	10/02	0.769	10/03	1.712	10/04	Continuing	Continuing	
Software Development	WR	EODTD, IH, MD	3.379	0.150	10/02	0.150	10/03	0.200	10/04	Continuing	Continuing	
ILS	WR	EODTD, IH, MD	36.020	0.900	10/02	0.750	10/03	1.000	10/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			118.811	2.694		1.669		2.912		0.000	126.086	
Remarks:												
Program Management Support	C/CPFF	Dynamic Systems, Alex, VA	3.190	0.270	10/02						3.460	
Program Management Support	C/CPFF	TBD				0.300	10/03	0.300	10/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			3.190	0.270		0.300		0.300		0.000	4.060	
Remarks:												

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

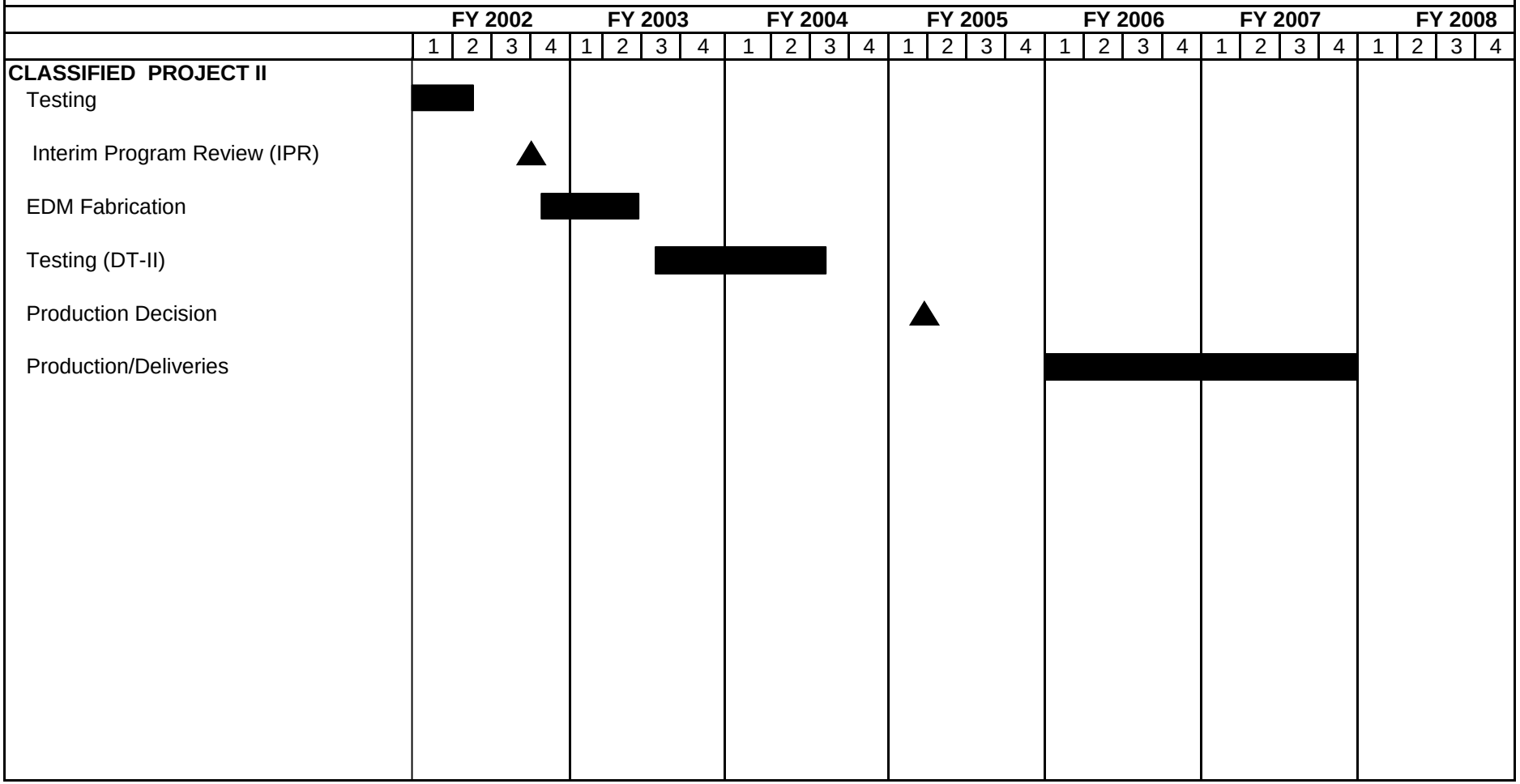
Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q0377/Joint Service EOD Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	EODTD, IH, MD	54.703	1.870	10/02	1.574	10/03	2.000	10/04	Continuing	Continuing	N/A
Operational Test & Evaluation	WR	EODTD, IH, MD	8.245								8.245	N/A
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			62.948	1.870		1.574		2.000		0.000	68.392	
Remarks:												
Program Management Support	WR	EODTD, IH, MD	3.920	0.250	10/02	0.350	10/03	0.400	10/04	Continuing	Continuing	N/A
Miscellaneous	Various	Various	3.586	0.897	02/03	0.686	10/03	0.990	10/04	Continuing	Continuing	N/A
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			7.506	1.147		1.036		1.390		Continuing	Continuing	
Remarks:												
Total Cost			192.455	5.981		4.579		6.602		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 64

EXHIBIT R-4, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N JT Service EOD Development 06036	PROJECT NAME AND NUMBER JT Service EOD Systems/Q0377

0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems

RDT&E Milestone Chart



CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N JT Service EOD Development 06036	PROJECT NAME AND NUMBER JT Service EOD Systems/Q0377

0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems

RDT&E Milestone Chart

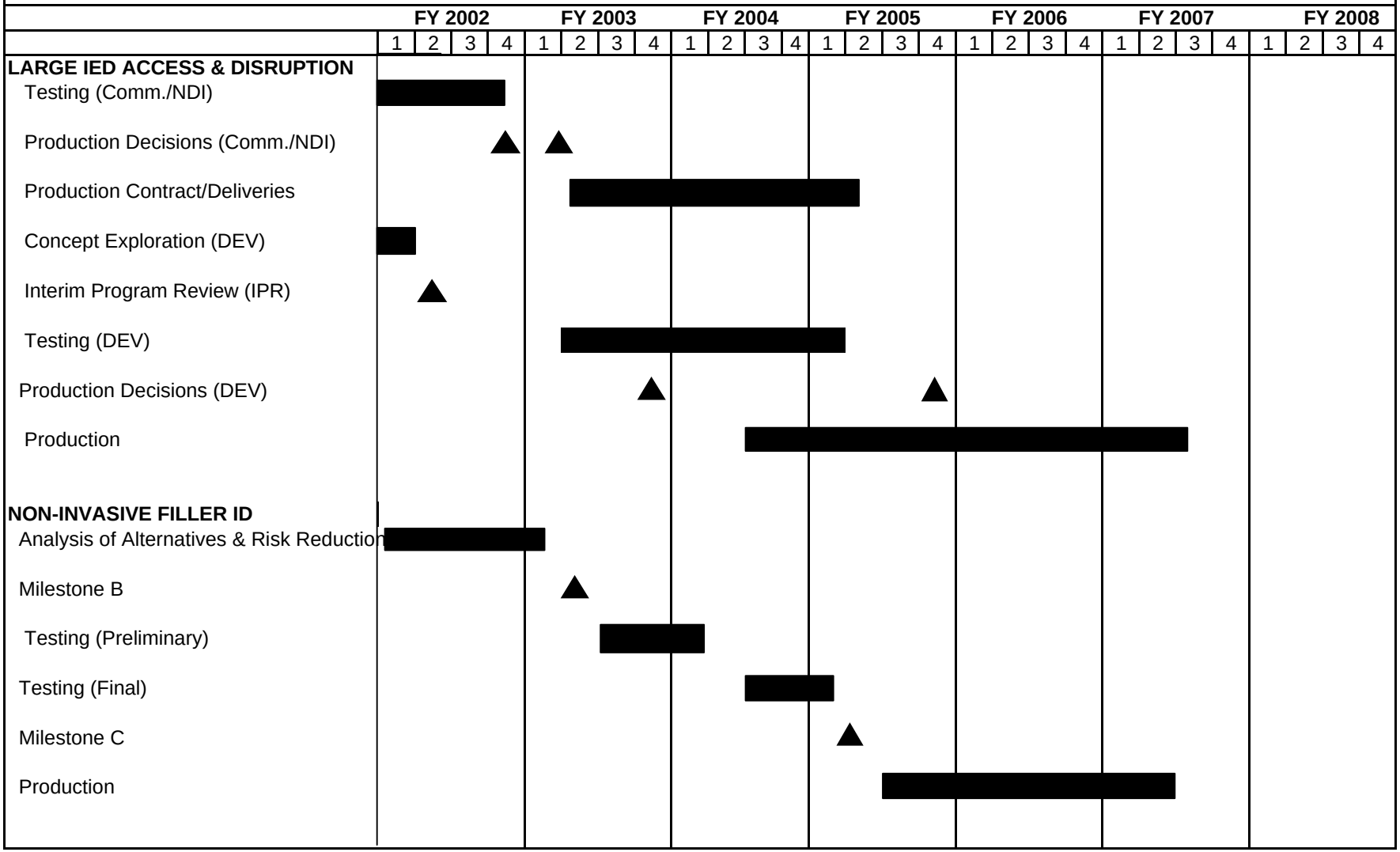
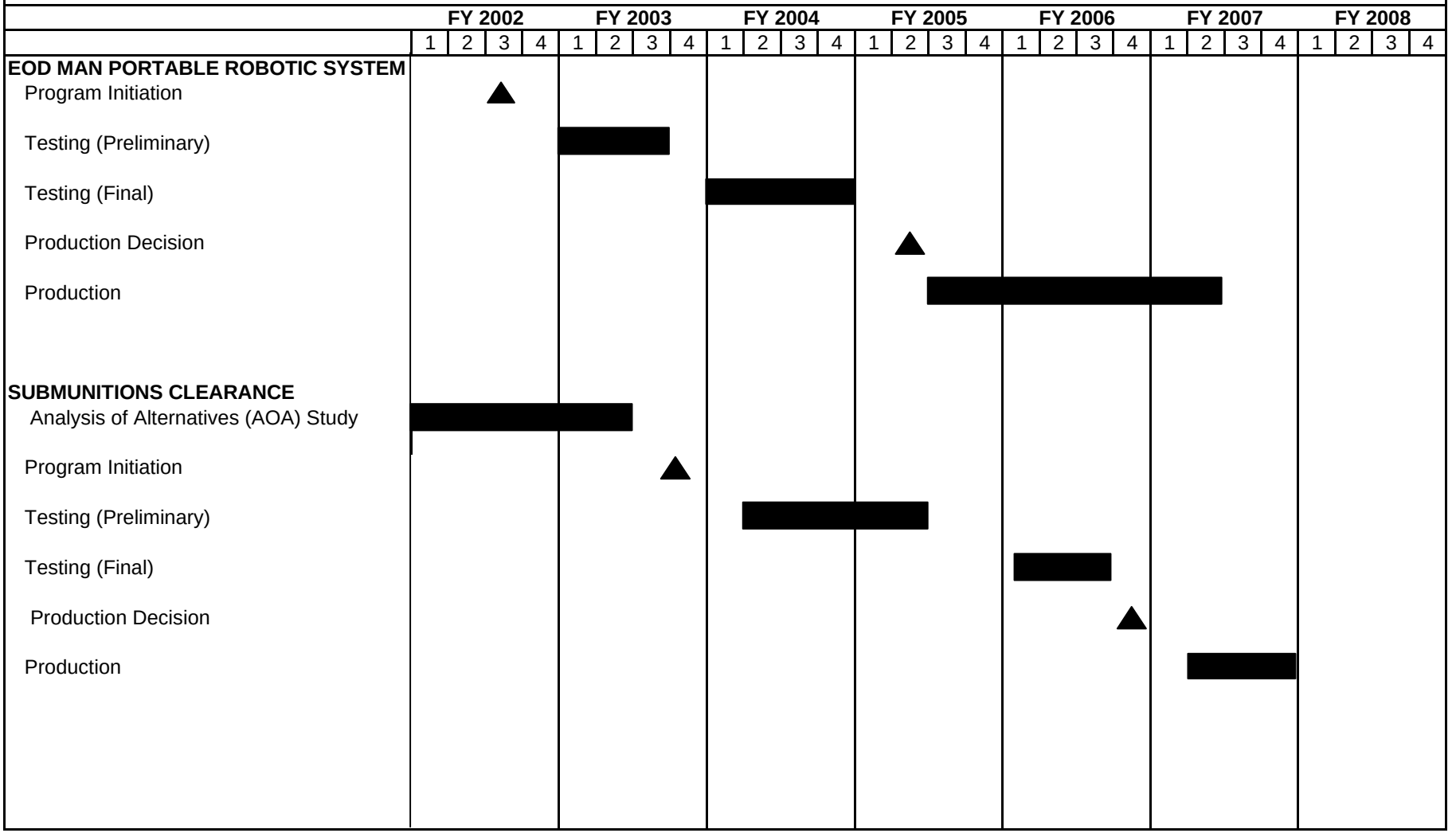


EXHIBIT R-4, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N JT Service EOD Development 06036	PROJECT NAME AND NUMBER JT Service EOD Systems/Q0377

0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems

RDT&E Milestone Chart

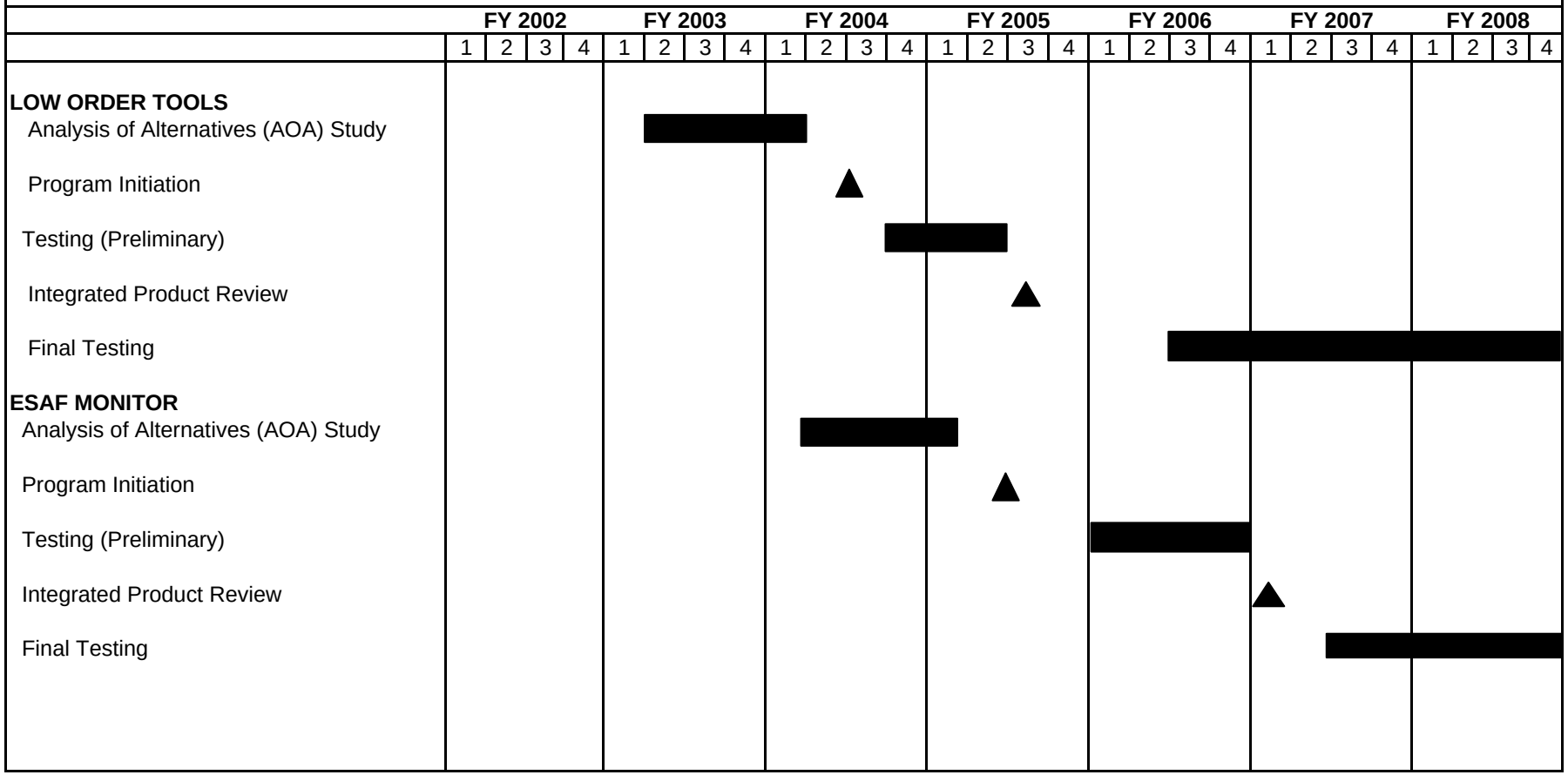


CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2003**
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

0603654N Joint Service EOD Development; Q0377 Joint Service EOD Systems

RDT&E Milestone Chart



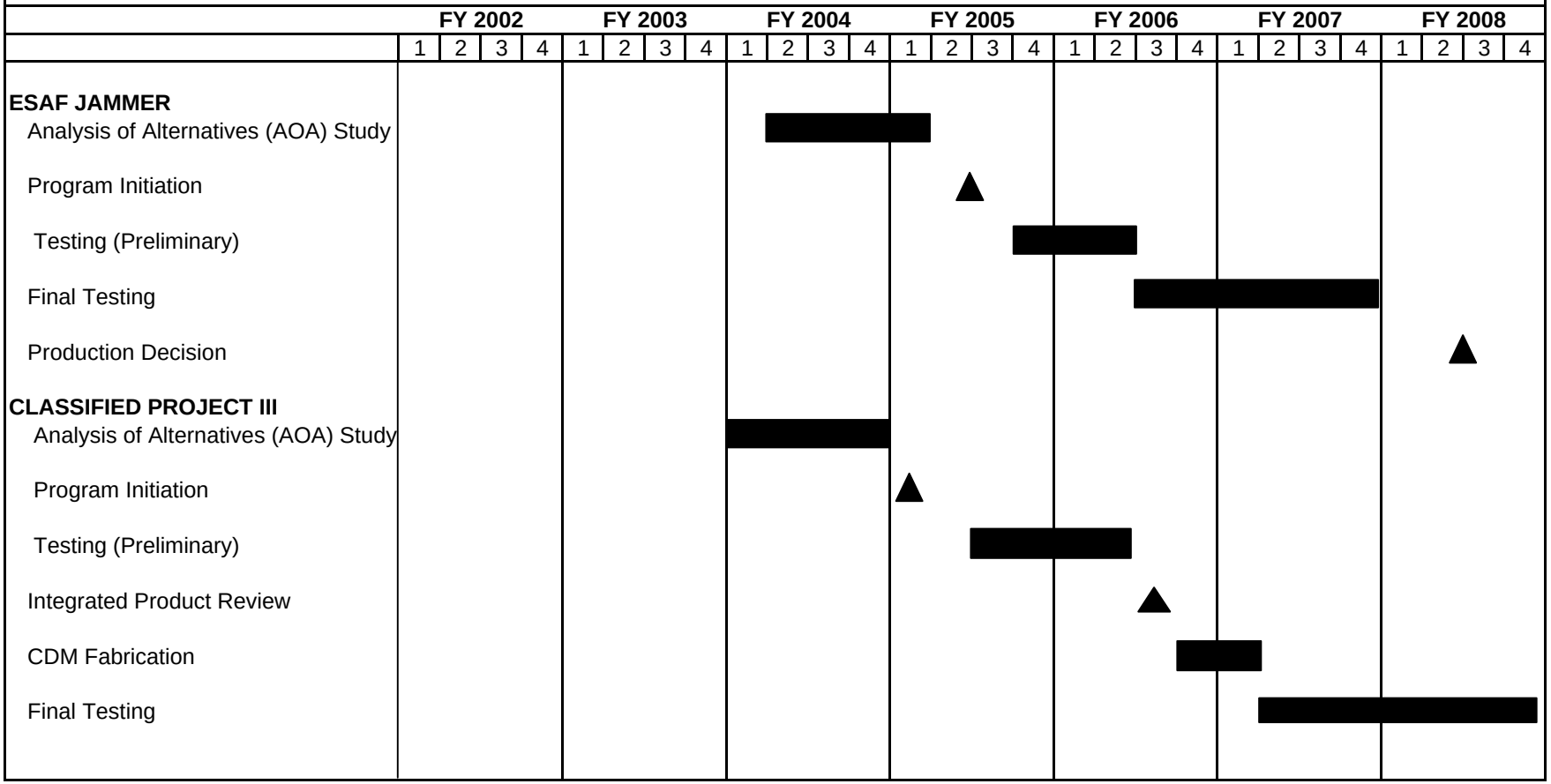
R-1 SHOPPING LIST- ITEM NO. 64

CLASSIFICATION:

EXHIBIT R-4, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N JT Service EOD Development 06036	PROJECT NAME AND NUMBER 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. 64

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q0377/Joint Service EOD Systems			
CLASSIFIED PROJECT II	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing	1Q-2Q							
Interim Program Review (IPR)	3Q-4Q							
EDM Fabrication	4Q	1Q-2Q						
Testing (DT-II)		3Q-4Q	1Q-3Q					
Production Decision				1Q				
Production/Delieveries					1Q-4Q	1Q-4Q		
LARGE IED ACCESS & DISRUPTION								
Testing (Comm./NDI)	1Q-4Q							
Production Decision (Comm./NDI)	4Q	1Q						
Product Contract/Deliviers		2Q-4Q	1Q-4Q	1Q-2Q				
Concept Exploration (DEV)	1Q							
Interim Program Review (IPR)	2Q							
Testing (DEV)		2Q-4Q	1Q-4Q	1Q				
Production Decision (DEV)		4Q		4Q				
Production			3Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q		
NON-INVASIVE FILLER ID								
Analysis of Alternatives & Risk Reduction	1Q-4Q	1Q						
Milestone B		2Q						
Testing (Preliminary)		3Q-4Q	1Q					
Testing (Final)			3Q-4Q	1Q				
Milestone C				2Q				
Production				3Q-4Q	1Q-4Q	1Q-2Q		
EOD MAN PORTABLE ROBOTIC SYSTEM								
Program Initiaion	3Q-4Q							
Testing (Preliminary)		1Q-3Q						
Testing (Final)			1Q-4Q					
Production Decision				2Q				
Production				2Q-4Q	1Q-4Q	1Q-2Q		

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q0377/Joint Service EOD Systems			
SUBMUNITIONS CLEARANCE	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Analysis of Alternatives (AOA) Study	1Q-4Q	1Q-2Q						
Program Initation		3Q-4Q						
Testing (Preliminary)			2Q-4Q	1Q-2Q				
Testing (Final)					1Q-3Q			
Production Decision					4Q			
Production						2Q-4Q		
LOW ORDER TOOLS								
Analysis of Alternatives (AOA) Study		2Q-4Q	1Q					
Program Initiation			2Q-3Q					
Testing (Preliminary)			3Q-4Q	1Q-2Q				
Intergrated Product Review				3Q				
Final Testing					3Q-4Q	1Q-4Q	1Q-4Q	
ESAF MONITOR								
Analysis of Alternatives (AOA) Study			2Q-4Q	1Q				
Program Initation				2Q				
Testing (Preliminary)					1Q-4Q			
Intergrated Product Review						1Q		
Final Testing						3Q-4Q	1Q-4Q	
ESAF JAMMER								
Analysis of Alternatives (AOA) Study			2Q-4Q	1Q				
Program Initation				2Q-3Q				
Testing (Preliminary)				3Q-4Q	1Q-2Q			
Final Testing					3Q-4Q	1Q-4Q		
Production Decision							2Q-3Q	
CLASSIFIED PROJECT III								
Analysis of Alternatives (AOA) Study			1Q-4Q					
Program Initation				1Q				
Testing (Preliminary)				3Q-4Q	1Q-2Q			
Intergrated Product Review					3Q			
CDM Fabrication					3Q-4Q	1Q-2Q		
Final Testing						2Q-4Q	1Q-4Q	

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q1317/EOD Diving Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**6.545**	**6.608**	**7.806**	**9.030**	**8.958**	**9.154**	**10.378**	**8.907**
RDT&E Articles Qty	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**	**Various**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Provides for development of diving equipment and explosive charges to support Explosive Ordnance Disposal (EOD) underwater operations. The equipment must have inherently low acoustic and magnetic signatures in order to allow the EOD technician to safely approach, render-safe, and dispose of sea mines and other underwater ordnance. 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.

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/EOD Diving Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.218	0.237	0.450	0.664
RDT&E Articles Quantity	Various	Various	Various	

Test and gain approval for Navy use (ANU) of EOD diving, Commercial/Non-Developmental Items (C/NDI).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.431	0.000	0.000	0.000
RDT&E Articles Quantity				

Obtain Milestone III decision for the Acoustic Firing System and production decision for the Underwater Imaging System.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.166	1.686	0.800	0.200
RDT&E Articles Quantity				

Development of Advanced Underwater Limpet Mine equipment to enhance EOD units' ability to detect neutralize and gather inellligence on underwater limpet and special attach mines and the development of low magnetic Micro Diver Display that provides sonar input from the Underwater Imaging Systems when in dark turbid, low visibility water environments.

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **Feburary 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.250	0.000	0.000	0.000
RDT&E Articles Quantity				

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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.450	0.400	0.313	0.000
RDT&E Articles Quantity				

Develop and test a product improvement Advanced Miniature Mine PIP Sensor for the Underwater Imaging System to allow the system to conduct stand-off identification and computer aided detection and classification.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.030	4.019	4.254	4.495
RDT&E Articles Quantity				

Develop, test, and gain approval for fleet use of specialized equipment to suppor 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.

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/Joint Service EOD Systems

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.266	0.525	1.626
RDT&E Articles Quantity				

Develop an Active Thermal Protection System to support VSW and EOD MCM diving in cold water environments and the development of an Advanced Underwater Breathing Apparatus (UBA). Develop a diver Hull Navigation System to improve current capabilities in existing hull search operations. Develop Buried Mine Detection System for use by EOD divers to locate buried sea mines.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	1.464	2.045
RDT&E Articles Quantity				

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

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/Joint Service EOD Systems	

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.200	0.000	0.000	0.000
RDT&E Articles Quantity				

ERF,D Test and evaluate UUVs to enhance the EOD Force's underwater AT/FP capability.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity	.,			

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/Joint Service EOD Systems

(U) C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Previous President Budget (FY 03 Pres Controls)	6.788	6.757	6.007	5.170
Current BES/President's Budget (FY04 President Controls)	6.545	6.608	7.806	9.030
Total Adjustments	-0.243	-0.149	1.799	3.860
Summary of Adjustments				
Miscellaneous Adjustment	-0.243	-0.149	1.799	3.860
Subtotal	-0.243	-0.149	1.799	3.860

(U) Schedule:

The production decision for the Micro Diver Display slipped from FY03 to FY05 due to a delayed start of the project in FY02. The production decision for the Underwater Imaging System UIS slipped one quarter due to technical problems requiring additional testing. The Production decision was achieved in accordance with schedule in R-4. The production decision for the Unmanned Underwater Vehicle has slipped one year due to issue 66445 (Post-Production R&D Continuation), reducing R&D funding in FY05.

(U) Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603654N/Joint Service EOD Development	Q1317/Joint Service EOD Systems

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN 0975	3032	0	4689	6623	2390	1990	1650	1420	Continuing	Continuing
OPN 5509	2129	1006								

(U) E. ACQUISITION STRATEGY: *

Analysis of Alternatives (AOA) studies are always conducted prior to the initiation of new subprojects. The AOA addresses and emphasizes acquisition strategies of the most cost-effective solution over the subprojects' life-cycle. The acquisition strategies observe the following hierarchy of alternatives: commercial item (including modification), non-developmental item (including modification), and lastly, developmental programs. Contracting for RDT&E, if required, is always competitive and when feasible, production options are included.

(U) F. MAJOR PERFORMERS: **

The majority of funding in this line is executed by Naval Explosive Ordnance Disposal Technology Division located in Indian Head, MD in FY02 through FY05. The funding is used for develop Underwater EOD tools/equipment and to develop an Unmanned Underwater Vehicle. The funding document will be issued as follows: FY03-10/02; FY04-10/03; FY05 10/04.

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603654N/Joint Service EOD Development			PROJECT NUMBER AND NAME Q1317/Joint Service EOD Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	EODTD, IH, MD	26.750	3.366	10/02	3.835	10/03	4.775	10/04	Continuing	Continuing	
Software Development	WR	EODTD, IH, MD	1.291	0.250	10/02	0.250	10/03	0.250	10/04	Continuing	Continuing	
Systems Engineering	WR	EODTD, IH, MD	7.355	0.350	10/02	0.400	10/03	0.400	10/04	Continuing	Continuing	
ILS	WR	EODTD, IH, MD	11.317	0.250	10/02	0.300	10/03	0.300	10/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			46.713	4.216		4.785		5.725		0.000	61.439	
Remarks:												
Program Management Support	C/CPFF	Dynamic Systems, Alex, VA	3.186	0.351	10/02						3.537	
Program Management Support	C/CPFF	TBD				0.500	10/03	0.500	10/04	Continuing	Continuing	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			3.186	0.351		0.500		0.500		0.000	4.537	
Remarks:												

R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603654N/Joint Service EOD Development				PROJECT NUMBER AND NAME Q1317/Joint Service EOD Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	EODTD, IH, MD	3.120	0.350	10/02	0.550	10/03	0.650	10/04	Continuing	Continuing	
Operational Test & Evaluation	WR	EODTD, IH, MD	1.560								1.560	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			4.680	0.350		0.550		0.650		0.000	6.230	
Remarks:												
Program Management Support	WR	EODTD, IH, MD	5.417	0.700	10/02	0.800	10/03	0.800	10/04	Continuing	Continuing	
Miscellaneous	Various	Various	3.634	0.991	02/03	1.171	10/03	1.355	10/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			9.051	1.691		1.971		2.155		0.000	14.868	
Remarks:												
Total Cost			63.630	6.608		7.806		9.030		0.000	87.074	
Remarks:												

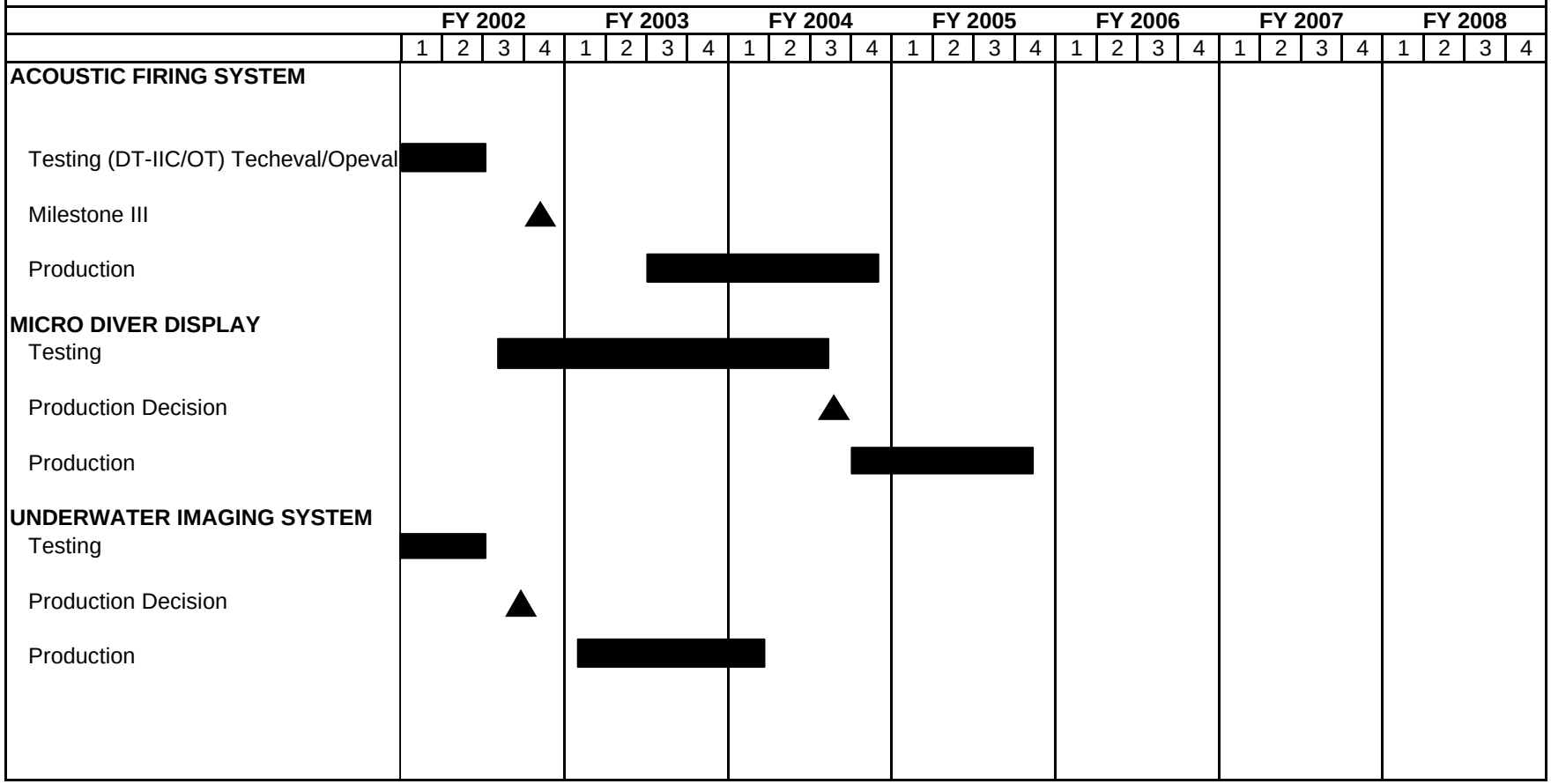
R-1 SHOPPING LIST - Item No. 64

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND I **JT Service EOD Development 0603**	PROJECT NAME AND NUMBER EOD Diving Systems/Q1317

0603654N Joint Service EOD Development; Q1317 EOD Diving Systems

RDT&E Milestone Chart

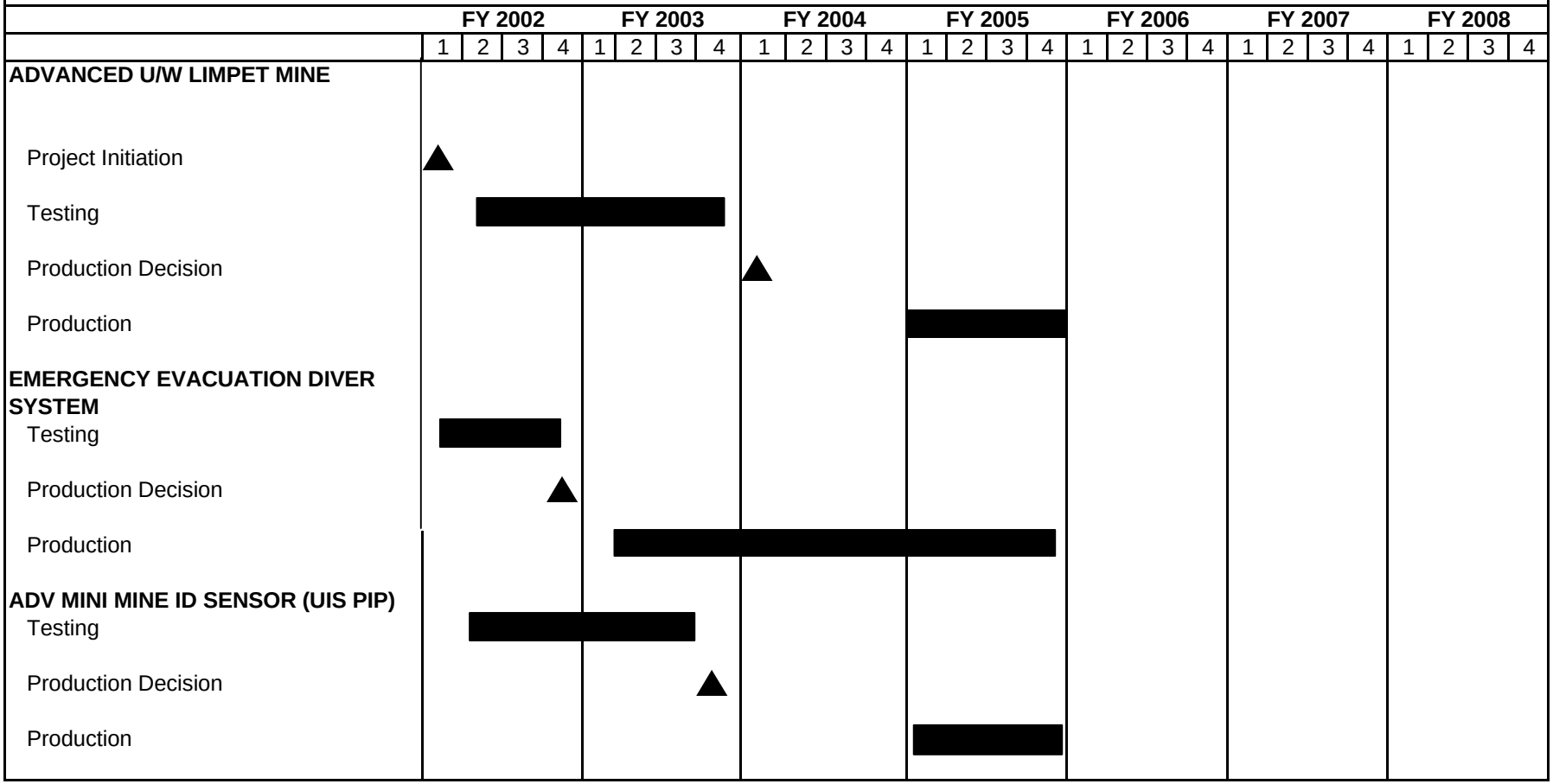


CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND I **JT Service EOD Development 0603**	PROJECT NAME AND NUMBER EOD Diving Systems/Q1317

0603654N Joint Service EOD Development; Q1317 EOD Diving Systems

RDT&E Milestone Chart



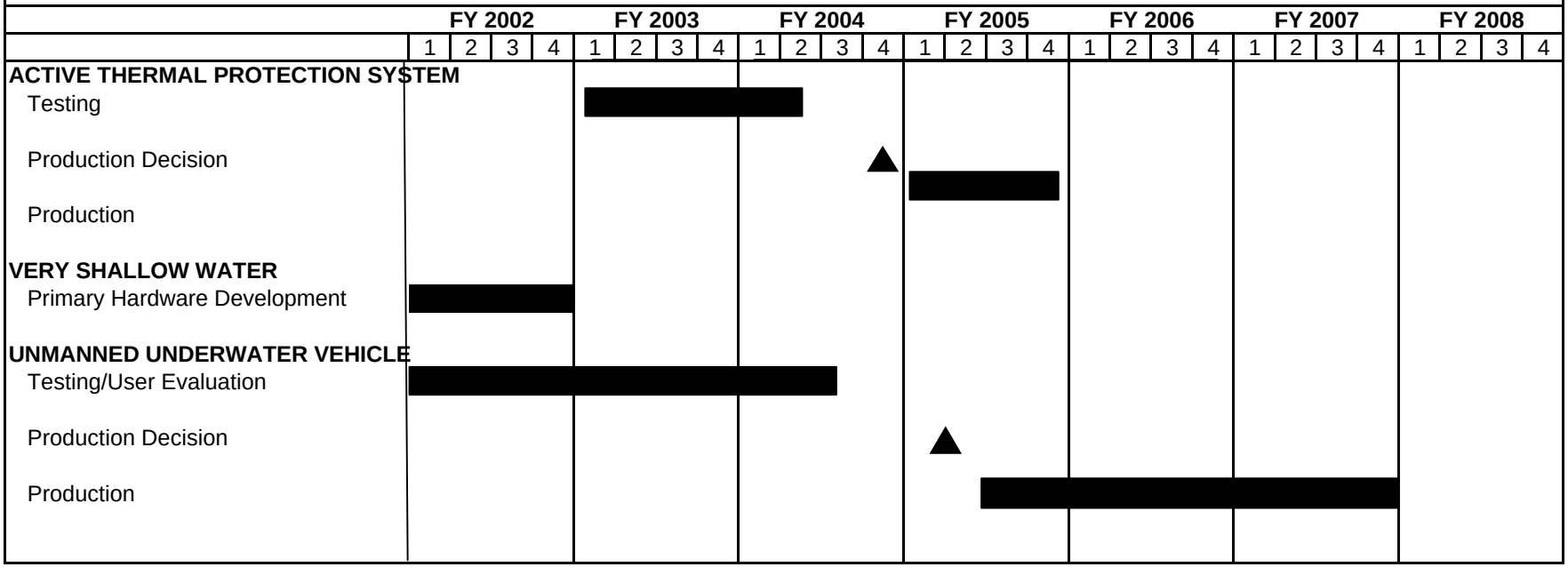
R-1 SHOPPING LIST - ITEM NO. 64

CLASSIFICATION:

EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**	PROGRAM ELEMENT NAME AND N **JT Service EOD Development 0603**	PROJECT NAME AND NUMBER EOD Diving Systems/Q1317

0603654N Joint Service EOD Development; Q1317 EOD Diving Systems

RDT&E Milestone Chart



R-1 SHOPPING LIST - ITEM NO. 64

Exhibit R-4, Schedule Profile
(Exhibit R-4, page 27of 29)

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654/Joint Service EOD Development				PROJECT NUMBER AND NAME Q1317/EOD Diving Systems			
ACOUSTIC FIRING SYSTEM	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Testing (DT-IIC/OT) Techeval/Opeval	1Q-2Q							
Milestone III	3Q-4Q							
Production		3Q-4Q	1Q-4Q					
MICRO DIVER DISPLAY								
Testing	3Q-4Q	1Q-4Q	1Q-3Q					
Production Decision			3Q					
Production			4Q	1Q-4Q				
UNDERWATER IMAGING SYSTEM								
Testing	1Q-3Q							
Production Decision	3Q							
Production		1Q-4Q	1Q					
ADVANCED U/W LIMPET MINE								
Project Initiation	1Q							
Testing	2Q-4Q	1Q-4Q						
Production Decision			1Q					
Production				1Q-4Q				
EMERGENCY EVACUATION DIVER SYSTEM								
Testing	1Q-4Q							
Production Decision	4Q							
Production		2Q-4Q	1Q-4Q	1Q-4Q				
ADV MINI MINE ID SENSOR (UIS PIP)								
Testing	2Q-4Q	1Q-3Q						
Production Decision		4Q						
Production				1Q-4Q				
ACTIVE THERMAL PROTECTION SYSTEM								
Testing		1Q-4Q	1Q-2Q					
Production Decision			4Q					
Production				1Q-4Q				

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/ BA-4**	PROGRAM ELEMENT 0603654/Joint Service EOD Development				PROJECT NUMBER AND NAME Q1317/EOD Diving Systems			
VERY SHALLOW WATER	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Primary Hardware Development	1Q-4Q							
UNMANNED UNDERWATER VEHICLE								
Testing/User Evalustion	1Q-4Q	1Q-4Q	1Q-3Q					
Production Decision				1Q-2Q				
Production				2Q-4Q	1Q-4Q	1Q-4Q		

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603658N Cooperative Engagement Capability			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**107.334**	**109.606**	**72.506**	**76.918**	**98.313**	**79.785**	**65.596**	**63.911**
K2039/Cooperative Engagement Capability (CEC)	**76.018**	**84.228**	**72.506**	**76.918**	**98.313**	**79.785**	**65.596**	**63.911**
K2616/Battlegroup Interoperability Issues	**31.316**	**25.378**						

Defense Emergency Response Funds (DERF) Funds: Not Applicable.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Cooperative Engagement Capability (CEC) significantly improves Battle Force Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture capable of fire control quality. CEC distributes sensor data from each ship and aircraft, or cooperating unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC data is presented as a superset of the best AAW sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapons system. CEC 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.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP), and Combat System modifications. The DDS encodes and distributes ownship sensor and engagement data and is a high capacity, jam resistant, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor that is able to process force levels of data in near real-time. This data is passed to the ship's combat system as high quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	15.716	14.198	12.000	11.453
RDT&E Articles Quantity				

Development, integration and testing of computer program Baseline 2.1.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	41.997	29.919	10.800	4.000
RDT&E Articles Quantity				

E-2C HAWKEYE 2000 aircraft and CEC AN/USG-3 system integration and FOT&E testing.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			1.600	8.400
RDT&E Articles Quantity				

Single Integrated Air Picture (SIAP) improvements.

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.949	2.500	2.500	2.500
RDT&E Articles Quantity				

Systems Engineering/Integration Agent (SE/IA) for development and execution of systems engineering processes.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.000	10.000	32.000	37.000
RDT&E Articles Quantity				

Block 2 competition development including CEC Baseline 3.0, and preparation/execution of acquisition strategy.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	33.671	46.259	5.638	5.839
RDT&E Articles Quantity				

CEC system improvements including enhanced communications, expansion of networking capacity, next generation/reduced size equipment, development of system protection/multi-level secure operations, and Planar Array Active Antenna (PAAA).

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.976	2.000	2.000	2.000
RDT&E Articles Quantity				

Participation in system interoperability exercises including the Joint Combat Identification Evaluation Team (JCIET) and Roving Sands, etc.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.488	3.900	5.400	5.161
RDT&E Articles Quantity				

Field activity support of CEC development efforts (i,e, In-Service Engineering; Integrated Logistics Support Planning).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.537	0.830	0.568	0.565
RDT&E Articles Quantity				

Program management support.

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	105.689	86.144	41.251	33.839
Current President's Budget: (FY04 Pres Controls)	107.334	109.606	72.506	76.918
Total Adjustments	1.645	23.462	31.255	43.079
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-1.457			
Economic Assumptions	-0.300	-0.628		
Block 2 Competition/Development			32.000	37.000
SIAP Improvements			1.600	8.400
Reprogramming	3.999			
Inflation		-1.189	-1.674	-1.658
Miscellaneous Adjustments	-0.597	-0.671	-0.671	-0.663
Congressional increases		25.950		
Subtotal	1.645	23.462	31.255	43.079

Schedule:

Accelerated deployment of USS NIMITZ Battle Group requires replanning of Follow-on Test and Evaluation (FOT&E) schedule of integrated CEC/E-2C HAWKEYE 2000 aircraft. FOT&E-1 tests with USS NIMITZ Battle Group completed to the extent possible. Rescheduling of FOT&E-2 tests are ongoing and dependent on analysis of FOT&E-1 test results and implementation of corrections, and identity and scheduling of follow-on CEC-equipped battle group. Fleet operational requirements could delay FOT&E-2 testing to FY 2004-05.

Technical:

Block 2 Development: Competitive contract award for follow-on spiral development of advanced capabilities representing the next evolution of CEC is planned in FY 2004. Goals of the Block 2 program include reduced system cost, size and weight while improving warfighting capabilities.

Single Integrated Air Picture (SIAP) Improvements: Initiate implementation of ten (10) key tactical Command and Control (C2) system improvements to improve tracking of airborne targets.

R-1 SHOPPING LIST - Item No.65

CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603658N Cooperative Engagement Capability	K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Cooperative Engagement Capability/OPN	83.878	71.207	62.845	85.696	64.777	56.158	75.978	67.904	128.185	940.644
E-2C Aircraft /APN	40.480	35.800	43.990	23.670	23.480	29.290	29.680	30.080	358.700	674.500
Various - SCN Procurement	12.300	44.600	21.800	56.800	23.500	41.200	43.500	40.400	332.700	700.200
Procurement, Marine Corps				12.000	17.500					29.500

E. ACQUISITION STRATEGY:

A full and open, best value competition to develop, produce and field CEC requirements including equipment design and development of a future CEC software baseline is planned. The combined effort is identified as CEC Block 2. The competition will be conducted in FY 2003 with an award expected in FY 2004.

Block 2 is expected to be an advanced sensor netting system that preserves the capability demonstrated in the CEC Block 1 OPEVAL, but providing cost, performance, and functional improvements. Notational Block 2 characteristics are expected to include: (1) compliance with evolutionary requirement of the CEC Operational Requirements Document (ORD); (2) potential growth to multi-service applications including compliance with applicable Joint Capstone Requirements Documents; (3) efficient bandwidth utilization; (4) an open network architecture to expand sensor netting track data availability to meet a variety of warfighter needs on a variety of platforms (I.e. ships, aircraft, land sites and vehicles); (5) anti-tamper capabilities; (6) compatibility with legacy combat systems; and (7) compliance with Joint Technical Architecture.

F. MAJOR PERFORMERS:

Raytheon Systems Company, St. Petersburg, FL Development of AN/USG-2 (shipboard) and AN/USG-3 (airborne) equipment and support of testing.
Johns Hopkins University, Applied Physics Laboratory, Laurel, MD Technical Design Agent for AN/USG-2 and AN/USG-3 equipment and support of testing.
Northrop-Grumman Corporation, Bethpage, LI, NY Integration of AN/USG-3 equipment with E-2C HAWKEYE 2000 aircraft.
Naval Surface Weapons Center, Dahlgren, VA Software Support Activity (SSA) and Systems Engineering/Integration Agent (SE/IA).

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

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

PROGRAM ELEMENT: 0603658N Cooperative Engagement Capability

PROJECT NUMBER AND NAME: K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AN/USG-2/3 Development	CPAF	Raytheon, St. Peters., FL	546.730	29.665	10/02	9.950	10/03	9.800	10/04	Continuing	Continuing	TBD
AN/USG-2/3 Development	CPAF	Award Fees	81.000	4.393	Various	1.500	Various	1.500	Various		Continuing	TBD
AN/USG-2/3 Development/TDA	CPFF	JHU/APL, Laurel, MD	228.318	8.548	11/02	8.000	10/03	8.000	10/04	Continuing	Continuing	TBD
Block 2 Development/Competition	CPAF	Various	1.000	10.000	Various	32.000	12/03	37.000	12/04	Continuing	Continuing	TBD
E-2C Aircraft Integration	CPAF	Northrop-Grumman, LI., NY	173.289	13.100	10/02	4.800	10/03				191.189	
Tactical Component Network (TCN)	CPFF	Various	3.999	18.000	Various						21.999	21.999
SIAP Improvements	CPAF	TBD				1.600	10/03	8.400	10/04	33.000	43.000	43.000
P-3 Aircraft Integration	CPAF		40.377								40.377	40.377
Baseline 2.2 Development	CPAF	Lockheed-Martin	11.881								11.881	TBD
Space Based IR Sensors (SBIRS)	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, CA	13.642	1.629	10/02	3.000	10/03	2.500	10/04	Continuing	Continuing	
Land Based Test Network	PD	SPAWAR (PMW-159)	1.302								1.302	
Land Based Test Network	PD	NATC, Patuxent River, MD	0.957								0.957	
Software Support Activity	WR	NSWC, Dahlgren, VA	51.741	4.235	10/02	4.000	10/03	3.500	10/04	Continuing	Continuing	
Antenna Redesign	RC	NSWC, Crane, IN	6.483								6.483	
ILS Planning	WR	NSWC, Crane, IN	38.524	0.894	10/02	1.000	10/03	1.000	10/04	Continuing	Continuing	
AEGIS Integration	CPAF	Lockheed-Martin	124.933								124.933	
SSDS/ACDS Integration	CPAF	Raytheon, Sunnyvale, CA	39.871								39.871	TBD
Area Air Def. Commander (AADC)	CPAF	General Dynamics	10.096								10.096	
Various	Various	Miscellaneous	85.958			0.088	10/03	0.653	10/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			1,478.205	90.464		65.938		72.353		Continuing	Continuing	

Remarks:

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603658N Cooperative Engagement Capability				PROJECT NUMBER AND NAME K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test Support	CPAF	Raytheon, St. Peters., FL	6.635	1.481	11/02	1.306	10/03				9.422	TBD
Test Support	CPAF	Award Fees	0.983	0.219	Various	0.194	Various					
Test Support	CPFF	JHU/APL, Laurel, MD	9.007	1.000	11/02	1.000	10/03	0.800	10/04		11.807	TBD
Test Support	WR	NRL, Washington, DC	5.692	1.706	10/02						7.398	
Test Support	WR	NSWC, Port Hueneme, CA	20.170	1.477	10/02	1.000	10/03	1.000	10/04		23.647	
Air Operations Test Support	PD	NAVAIR (PMA-207)	5.409	2.101	10/02						7.510	
Test Data Reduction	WR	NWAS, Corona, CA	14.254	2.000	10/02	1.000	10/03	0.800	10/04		18.054	
Various	Various	Miscellaneous	91.473	8.328	Various	1.500	Various	1.400	Various		102.701	
			153.623	18.312		6.000		4.000		Continuing	Continuing	
Remarks:												
Various	Various	Miscellaneous	59.534	0.830	10/02	0.568	10/03	0.565	10/04	Continuing	Continuing	
Subtotal Management			59.534	0.830		0.568		0.565		Continuing	Continuing	
Remarks:												
Total Cost			1,691.362	109.606		72.506		76.918		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603658N Cooperative Engagement Capability

PROJECT NUMBER AND NAME: K2039/Cooperative Engagement Capability; K2616/BG Interoperability Issues

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
AN/USG-2 (Shipboard)			MS III																													
AN/USG-3 (Airborne)												IOC																				
AN/USG-2 (Shipboard) and AN/USG-3 (Airborne)												FOC																				
Test & Evaluation Milestones																																
Development Test (AN/USG-3)		DT-IIIA								DT-IIIB																						
Operational Test (AN/USG-3)		OT-IIIA									OT-IIIB																					
Production Milestones																																
AN/USG-2 (Shipboard)			FRP																													
AN/USG-3 (Airborne)			LRIP-5			LRIP-6																										
Deliveries	6	3	2	3	2	3	3	1	3	3	3	2	3	4	2	3	6	6	6	5	4	3	3	2	4	4	4	3	3	2	2	1

R-1 SHOPPING LIST - Item No. 65

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603658N Cooperative Engagement Capability				PROJECT NUMBER AND NAME K2039/CEC; K2616/BG Interoperability Issues			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
BLOCK 1:								
Milestone III (MSIII) (AN/USG-2)	3Q02							
Full Rate Production (AN/USG-2)	3Q02							
LRIP-5 (AN/USG-3)	3Q02							
FOT&E-1 (AN/USG-3) (DT-IIIA/OT-IIIA) (Start)	2Q02							
FOT&E-1 (AN/USG-3) (DT-IIIA/OT-IIIA) (Complete)	4Q02							
FOT&E-2 (AN/USG-3) (DT-IIIB/OT-IIIB) (Start)			2Q04					
FOT&E-2 (AN/USG-3) (DT-IIIB/OT-IIIB) (Complete)			3Q04					
Initial Operational Capability (AN/USG-3)				1Q05				
Full Operational Capability (FOC) (AN/USG-2-3)				1Q05				
BLOCK 2:								
To Be Determined (TBD)								

R-1 SHOPPING LIST - Item No. 65

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603713N/Ocean Engineering Technology Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**15.173**	**14.920**	**18.180**	**14.917**	**5.163**	**6.590**	**6.715**	**6.840**
S0099/Deep Submergence Biomedical Development	**3.587**	**3.766**	**3.030**	**3.291**	**3.384**	**4.086**	**4.163**	**4.241**
S0394/Shallow Depth Diving Equipment	**11.586**	**11.154**	**15.150**	**11.626**	**1.779**	**2.504**	**2.552**	**2.599**

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

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain underwater operations in the areas of search, location, rescue, recovery, salvage, construction, and protection of offshore assets. This program develops medical technology, diver life support equipment, and the vehicles, systems, tools and procedures to permit manned underwater operations.

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**3.587**	**3.766**	**3.030**	**3.291**	**3.384**	**4.086**	**4.163**	**4.241**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Develops advanced biomedical and bioengineering technology for enhancing medical and life support for submarine escape and rescue; and for diver safety and effectiveness; supports deeper, longer, and more flexible dives. Deliverables for DISSUB (disabled submarine) include: medical procedures for submarine escape and rescue (including new Submarine Rescue Diving and Recompression System (SRDRS)), life support parameters, medical procedures for life support, exposure guidance for atmospheric contaminants, non-chemical CO2 scrubbing, prevention and treatment of decompression illness, and senior survivor expert decision system. Deliverables for diver enhancement include: exposure guidance for diver underwater continuous noise, impulse noise, and underwater blast, exposure guidance for oxygen breathing, collection of operational diving depth/time profiles to predict decompression risk, and enhanced underwater swimming efficiency. Requirements: NAPDD #587-873, Deep Submergence Biomedical Development, 23 November 1999.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0099/Deep Submergence Biomedical Development

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.997	1.451	1.440	1.660
RDT&E Articles Quantity				

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. Submarine ballast tank air quality survey. Novel methods for diver thermal protection. Improve resistance to O2 toxicity. Diver anthropometry. Chemical hardening of diving equipment. Predictive index of visual and auditory O2 toxicity. Guidelines for flying after diving. Guidelines for infra- and ultra-sound diver exposure. Develop an advanced diver thermal model. Guidelines for ballast tank diving. Protective gear for diver noise exposure. Electronic collection of operational dive data.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.577	2.150	1.408	1.434
RDT&E Articles Quantity				

Submarine Rescue: Decompression procedures for pressurized SRDRS operators. Use of perfluorocarbons to accelerate decompression in submarine rescue. Adjunctive therapies for treating DISSUB survivors. Guidance for food, water, clothing, medical supplies to enhance survival of submarine crews awaiting rescue. Flexible computer generated decompression schedules for wide range of conditions in a DISSUB. Develop DISSUB triage procedures. DISSUB survival trial. Develop oxygen metabolizer for closed vehicles. Accelerate decompression by negative pressure breathing. Treatment guidance for decompression sickness and arterial gas embolism in submarine escape and rescue. Interventions for toxicological problems with rescued submariners. Minimizing decompression sickness and arterial gas embolism with Submarine Escape and Immersion Suit (SEIS) training. Use of pharmacologic agents to reduce decompression risk in submarine rescuees.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.013	0.165	0.182	0.197
RDT&E Articles Quantity				

Used for cancelled accounts (19K) and RDA (74K).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0099/Deep Submergence Biomedical Development

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	3.723	3.851	3.937	4.009
Current BES/President's Budget (FY04 President Controls)	3.587	3.766	3.030	3.291
Total Adjustments	-0.136	-0.085	-0.907	-0.718
Summary of Adjustments				
63983 Section 8123: Management Refo	-0.033			
66445 Post-Production R&D Continuati			-0.463	-0.580
66458 Sec. 313, PL 107-206: Revised	-0.008			
66788 FY02 BTR (July-02)	-0.074			
67290 Business Process Reform (SEC.		-0.015		
67291 Economic Assumptions (SEC. 813)	-0.010	-0.022		
67446 IT Cost Growth (SEC. 8109)		-0.007		
69270 FY02 Actuals (30-Sept)	-0.011			
69772 Non-S&T R&D Offset			-0.323	
69833 PBD203 ACTD offsets			-0.052	-0.067
69976 Inflation Savings		-0.041		
70073 Purchase Infl			-0.053	
70078 Nonpay Inflation			-0.016	
70231 FY05/09 Inflation				-0.071
Subtotal	-0.103	-0.085	-0.907	-0.718

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0099/Deep Submergence Biomedical Development

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

Integrated thrust area teams (e.g. decompression research) are established with university, commercial and in-house Navy lab to jointly execute biomedical R&D; peer review of research proposals accomplished by independent Technical Advisory Board; annual review of progress by Executive Review Board (CNO/NAVSEA/ONR/BUMED); program management by 0-6 Medical Dept Officer; contracting by competitive process using BAA and leveraging ONR capabilities.

F. MAJOR PERFORMERS: **

Navy Experimental Diving Unit (NEDU) (Oct/each FY) is the center for manned diving biomedical research and development for the Navy. All Navy manned diving research facilities were consolidated at NEDU during the last BRAC.

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**11.586**	**11.154**	**15.150**	**11.626**	**1.779**	**2.504**	**2.552**	**2.599**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project is to develop systems to support submarine escape and rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as, Navy needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. Efforts are currently (through FY 05) 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0394/Shallow Depth Diving Equipment

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	11.571	10.665	14.241	10.928
RDT&E Articles Quantity				

Complete fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Complete design, begin fabrication and acceptance testing of prototype Pressurized Rescue Module and support equipment. Begin integration and testing of all SRDRS components.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.015	0.489	0.909	0.698
RDT&E Articles Quantity				

Used for extramural program issues.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0394/Shallow Depth Diving Equipment

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	12.354	11.406	10.645	10.843
Current BES/President's Budget (FY04 President Controls)	11.586	11.154	15.150	11.626
Total Adjustments	-0.768	-0.252	4.505	0.783
Summary of Adjustments				
28020 SRDRS Shortfall			1.673	0.504
28115 SRDRS GOCO			3.182	0.530
63983 Section 8123: Management Refo	-0.109			
64696 FY2002 SBIR (dtd 5-15-02)	-0.327			
66458 Sec. 313, PL 107-206: Revised	-0.026			
67290 Business Process Reform (SEC.		-0.046		
67291 Economic Assumptions (SEC. 813)	-0.033	-0.064		
67446 IT Cost Growth (SEC. 8109)		-0.021		
69270 FY02 Actuals (30-Sept)	-0.273			
69976 Inflation Savings		-0.121		
70073 Nonpay Purchase Infl			-0.268	
70078 Nonpay Inflation			-0.082	
70231 FY05/09 Inflation				-0.251
	-0.768	-0.252	4.505	0.783

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603713N/Ocean Engineering Technology Development	S0394/Shallow Depth Diving Equipment

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

The Atmospheric Diving Suit (ADS) Segment of the SRDRS is a Non-Developmental Item (NDI) which was 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 were awarded competitively and were 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).

F. MAJOR PERFORMERS: **

Oceaneering International is providing systems engineering and integration support for the SRS through a Veterans Administration contract. Oceanworks, Inc. is the detailed designer and fabrication of the Pressurized Rescue Module. Global Phillips Cartner is providing fabrication and integration of the SRDRS mission support equipment.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0099/Deep Submergence Biomedical Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NEDU	18.293	2.408	12/02	2.826		3.070		Continuous	26.597	
	CPIF	OceanWorks		1.171	11/02						1.171	1.171
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			18.293	3.579		2.826		3.070		0.000	27.768	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	IPA		0.102								0.102	
Travel			0.018	0.022		0.022		0.024		Continuous	0.086	
Labor (Research Personnel)											0.000	
SBIR Assessment			0.093	0.165		0.182		0.197			0.637	
Subtotal Management			0.213	0.187		0.204		0.221		0.000	0.825	
Remarks:												
Total Cost			18.506	3.766		3.030		3.291		0.000	28.593	
Remarks:												

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC-CSS	20.089								20.089	
	CPAF	Oceaneering	9.078								9.078	
	WX	NFESC	3.240	0.137	Dec-02						3.377	
	CPAF	GPC	6.714	1.456	Nov-02						8.170	
	CPIF	Oceanworks	11.968	6.981	Nov-02						18.949	
	Various	Miscellaneous	2.435			8.741		6.128			17.304	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	CPAF	Oceaneering	8.253								8.253	
	MIPR	VA	3.213	1.250	Dec-02	3.100		2.000			9.563	
											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees	CPAF	Oceaneering	1.234								1.234	
	CPAF	GPC	0.254	0.044	Nov-02						0.298	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			66.478	9.868		11.841		8.128		0.000	96.315	

Remarks:

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support	Various	Miscellaneous	0.279								0.279	
Software Development	WR	NSWC CD	0.221								0.221	
Integrated Logistics Support	MIPR	DOI	2.114								2.114	
	Various	Miscellaneous				0.800		0.800			1.600	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees	CPAF	Phoenix International	0.023								0.023	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			2.637	0.000		0.800		0.800		0.000	4.237	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development			PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	1.093	0.220	11/02	0.300		0.300			1.913	
Operational Test & Evaluation			0.020	0.050		0.100		0.500			0.670	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			1.113	0.270		0.400		0.800		0.000	2.583	
Remarks:												
Contractor Engineering Support	Various	Miscellaneous	1.225	0.250		0.250		0.250			1.975	
Government Engineering Support	WR	NFESC	0.416								0.416	
	MIPR	DOI	1.161								1.161	
	WX	PSNSY		0.011							0.011	
	Various	Miscellaneous	0.347	0.066		0.750		0.750			1.913	
Program Management Support	Various	Miscellaneous	0.329	0.100		0.100		0.100			0.629	
Travel			0.365	0.100		0.100		0.100			0.665	
Transportation											0.000	
*SBIR Assessment			0.300	0.489		0.909		0.698			2.396	
Subtotal Management			4.143	1.016		2.109		1.898		0.000	9.166	
Remarks:												
Total Cost			74.371	11.154		15.150		11.626		0.000	112.301	

Remarks: *SBIR Assessment includes other extramural program assessments FY 02-05. PY only includes some ($300K) of the non-SBIR extramural program expenses from FY 02 still listed in program controls.

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

EXHIBIT R4, Schedule Profile — DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603713N/Ocean Engineering Technology Development

PROJECT NUMBER AND NAME: S0394/Shallow Depth Diving Equipment

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																				MS III												
Prototype Phase																				IOC												
SRDRS Development							PRM CDR SDC PCA			PRM FCA			PRM PCA																			
Delivery																																
Software																																
Test & Evaluation Milestones																																
Development Test					DT-II A2 OT-II A									DT-II C OOC PRMI	DT-II B		OOC SDS				OT-SRDRS											
Operational Test																																
Production Milestones																																
Deliveries																				SRDRS												

R-1 SHOPPING LIST - Item No. 66

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603713N/Ocean Engineering Technology Development				PROJECT NUMBER AND NAME S0394/Shallow Depth Diving Equipment			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR) - PRM		3Q						
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA2)		1Q-2Q						
Eng Dev Model (EDM) - Lab								
Software Delivery								
Preproduction Readiness Review (PRR)								
EDM Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA) ADS		1Q-2Q						
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery								
Developmental Testing (DT-IIB) SDS				3Q				
Physical Configuration Audit - SDC		3Q						
Start Low-Rate Initial Production II								
Operational Observation of Capability (OOC) SDS					1Q			
Developmental Testing (DT-IIC) SRS				2Q				
Functional Configuration Audit (FCA) - PRM			2Q					
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit - PRM			4Q					
Operational Observation of Capability (OOC) SRS				2Q				
Low-Rate Initail Production II Delivery								
Operational Evaluation SRDRS with 2nd PRM					4Q			
IOC					4Q			
Milestone III (MSIII)					4Q			
First Deployment PRM				3Q				
First Deployment SDS					2Q			
First Deployment SRDRS					2Q			

R-1 SHOPPING LIST - Item No. 66

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE PE0603721N / Environmental Protection			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**44.944**	**43.985**	**30.127**	**31.815**	**25.638**	**25.927**	**26.567**	**26.987**
Shipboard Waste Management / S0401	**29.223**	**28.163**	**25.283**	**24.171**	**17.010**	**15.464**	**15.888**	**16.366**
Environmental Compliance / W2210	**4.451**	**2.896**	**0.767**	**0.894**	**0.934**	**1.153**	**1.197**	**0.960**
Aviation Depot Maintenance Technology / W2623*	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Pollution Abatement / Y0817	**9.341**	**10.286**	**4.077**	**6.750**	**7.694**	**9.310**	**9.482**	**9.661**
Navy Environmental Compliance Operations / H9046*	**1.929**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Marine Mammal Detection & Mitigation / S9204*	**0.000**	**0.977**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Field Demonstration of Containment Tech / S9203*	**0.000**	**1.663**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Many environmental laws, regulations, and policies impose restrictions on Navy vessels, aircraft, and facilities that interfere with operations and/or increase the cost of operations. The Navy must be able to conduct its national security mission in compliance with applicable environmental requirements in the U.S. and abroad without compromising performance, safety, or health, while simultaneously minimizing the cost of compliance. This program develops 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 environmental 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 laws, regulations, and policies in four major areas: ozone depleting substances, liquid wastes, solid wastes, and hazardous and other wastes. Project W2210 funds RDT&E requirements that allow Navy compliance with laws, regulations and policies impacting the basing, re-alignment, operation, repair and replacement of Naval aircraft in four major areas: engine emissions, air vehicle hazardous materials and wastes, ozone depleting substances, and aviation shipboard emissions. Project Y0817 funds RDT&E requirements that allow Navy to develop and validate technologies to enable Navy facilities to comply with environmental laws, regulations, and policies in a cost-effective manner.

* Projects W2623, Y2402, Y2403, Y2837, H9046, S9203, and S9204 are Congressional adds.

R-1 SHOPPING LIST - Item No. 67-1 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME S0401 / Shipboard Waste Management			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**29.223**	**28.163**	**25.283**	**24.171**	**17.010**	**15.464**	**15.888**	**16.366**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Navy ships and submarines must routinely operate in U.S., international, and foreign waters, and visit numerous U.S. and foreign ports. No body of water is without environmental restrictions that impact the movements and operations of Navy vessels. Environmental requirements tend to be most restrictive in port and in coastal waters, where the Navy's increasing littoral presence places ships and submarines in discharge-restricted waters for longer periods of time. Growing international cooperation in addressing global environmental concerns is resulting in expanding areas of ocean designated as environmentally sensitive, where special prohibitions on ship discharges are imposed. Navy vessels must comply with applicable environmental legal requirements while ensuring continued access to all waters for operations, exercises, training, and port access. The large crews and limited onboard space of Navy ships and submarines severely constrain their ability to hold wastes for return to port for shoreside disposal. This project develops and evaluates shipboard waste processing equipment and systems to enable ships and submarines to manage their wastes in an environmentally-compliant, safe, and operationally-compatible manner. It also addresses afloat environmental issues other than shipboard wastes, e.g., protected marine animals and hull antifouling, that pose significant operational and port entry threats to the Navy Fleet.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	S0401 / Shipboard Waste Management

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Ozone Depleting Substances	3.100	3.591	1.000	1.000
RDT&E Articles Quantity				

FY 02: (U) Completed Integrated Logistics Support (ILS) documentation for CFC-114 air-conditioning plant conversion 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 ships.
FY 03: (U) 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 ships.
FY 04: (U) Complete development of shipboard alternative (non-vapor-compression) cooling concepts. Initiate development of solutions for lubrication and engineering design problems in surface ship CFC-114 air-conditioning plant conversion designs.
FY 05: (U) Continue development of solutions for lubrication and engineering design problems in surface ship CFC-114 air-conditioning plant conversion designs.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection	PROJECT NUMBER AND NAME S0401 / Shipboard Waste Management

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Integrated Liquid Wastes	11.263	9.772	5.500	7.600
RDT&E Articles Quantity				

FY 02: (U) Continued support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continued discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continued development of integrated liquid waste treatment system: completed development of 10-gpm Oil/Water Separator (OWS-10) Polisher and continued ILS documentation, completed development of 50-gpm Oil/Water Separator (OWS-50) Polisher and continued ILS documentation, and completed development of 5-gpm Oil/Water Separator (OWS-5) Polisher and continued ILS documentation; completed development of advanced Oil Content Monitor (OCM); continued development of Engineering Development Model (EDM) non-oily wastewater treatment system; and completed development of advanced thermal destruction system for concentrated ship liquid wastes. Completed development of design fixes for compensated fuel ballast systems.

FY 03: (U) Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: complete 10-gpm Oil/Waste Separator (OWS-10) Polisher ILS documentation, complete 50-gpm Oil/Water Separator (OWS-50) Polisher ILS documentation, and complete 5-gpm Oil/Water Separator (OWS-5) Polisher ILS documentation; continue development of Engineering Development Model (EDM) non-oily wastewater treatment system.

FY 04: (U) Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: continue development of Engineering Development Model (EDM) non-oily wastewater treatment system and MPCD treatment systems; and initiate development of shipboard Oil Pollution Abatement Systems improvements.

FY 05: (U) Continue support of rulemaking process with Environmental Protection Agency (EPA) in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels: continue discharge analyses and setting of Marine Pollution Control Device (MPCD) performance standards. Continue development of integrated liquid waste treatment system: continue development of Engineering Development Model (EDM) non-oily wastewater treatment system and MPCD treatment systems; and continue development of shipboard Oil Pollution Abatement Systems improvements.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	S0401 / Shipboard Waste Management

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Solid Wastes	6.260	6.500	6.968	3.600
RDT&E Articles Quantity				

FY 02: (U) Continued development of management processes and systems for plastics for submarine application: initiated SSN-21 Class submarine 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.
FY 03: (U) 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. Continue development of advanced thermal destruction system for processing shipboard solid wastes.
FY 04: (U) Continue development of advanced thermal destruction for processing shipboard solid wastes.
FY 05: (U) Continue development of advanced thermal destruction for processing shipboard solid wastes.

	FY 02	FY 03	FY 04	FY 05
Hazardous and Other Major Ship Wastes	8.600	8.300	11.815	11.971
RDT&E Articles Quantity				

FY 02: (U) 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. Completed development of oil spill response capabilities. Continued development of marine mammals ship database tracking system: continued demonstration. Continued development and testing of new low-copper underwater hull antifouling coatings. Continued development of underwater hull cleaning system.
FY 03: (U) 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. 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. Initiate development of Environmental Information Management System (EIMS).
FY 04: (U) Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard ship. 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. Continue development of Environmental Information Management System (EIMS).
FY 05: (U) Continue shipboard hazardous materials substitution and elimination process and continue test and evaluation of pollution-prevention equipment aboard ship. 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. Continue development of Environmental Information Management System (EIMS).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	S0401 / Shipboard Waste Management

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	31.559	28.798	28.403	26.536
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	29.223	28.163	25.283	24.171
Total Adjustments	-2.336	-0.635	-3.120	-2.365
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.288			
Economic Assumptions	-0.308	-0.635	-1.102	-1.035
Reprogrammings	-1.740		-2.018	-1.330
Congressional increases				
Subtotal	-2.336	-0.635	-3.120	-2.365

Schedule:

Not applicable.

Technical:

Not applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	S0401 / Shipboard Waste Management

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

(U) Demonstrated and validated technologies are transitioned to various SCN, OPN, and O&MN budget accounts for implementation as part of a Fleet modernization program or new ship construction.

(U) Related RDT&E: (U) Defense Research Sciences/Shipboard Processes (PE 61153N/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)

E. ACQUISITION STRATEGY:

(U) RDT&E Contracts are Competitive Procurements.

F. MAJOR PERFORMERS:

(U) NSWCCD, Bethesda, MD: Test and evaluates prototype and preproduction shipboard environmental systems and equipment in the laboratory and onboard ship.
(U) York International Corp,York,PA: Design and build prototype and preproduction shipboard air-conditioning and refrigeration systems that operate with new, environmentally-acceptable refrigerants.
(U) Geo-Centers, Inc., Boston, MA: Design and fabricate prototype shipboard waste treatment systems and equipment for test and evaluation.

R-1 SHOPPING LIST - Item No. 67-7 of 67-26

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)					DATE: **February 2003**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE0603721N / Environmental Protection			PROJECT NUMBER AND NAME S0401 / Shipboard Waste Management						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPFF	WMTD, Pitts, PA	14.580								14.580	14.580
Primary Hardware Development	C/CPFF	Geo-Centers, Inc,Bos.,MA	23.250	2.000	01/03	2.000	01/04	2.000	01/05	Cont	Cont	N/A
Primary Hardware Development	SS/CPFF	York Internat'l Corp,York,PA	2.700							N/A	2.700	2.700
Primary Hardware Development	SS/CPFF	York Internat'l Corp,York,PA	11.850							10.150	25.000	25.000
Primary Hardware Development	SS/CPFF	N. Res & Eng Corp,Wab.,MA	1.200							N/A	1.200	1.200
Primary Hardware Development	C/CPFF	M. Rosenblatt & Son, NY,NY	10.363	1.000	01/03	0.500		0.500		Cont	Cont	N/A
Ancillary Hardware Development	Various	Misc. Contracts	16.884	1.500	Var	1.500		1.000		N/A	N/A	N/A
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	C/CPFF	John J. McMullen & Son	4.487	0.600	12/02	0.200		0.200		Cont	Cont	N/A
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			85.314	5.100		4.200		3.700		Cont	Cont	N/A
Remarks: (1) Hardware Development and Systems Engineering Tasks use CPFF Delivery Contracts for Continuing Development of Pollution Abatement Hardware and Ship Systems Engineering Analysis.												
Development Support											0.000	
Software Development	Various	Misc. Contracts	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	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

R-1 SHOPPING LIST - Item No. 67-8 of 67-26

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME S0401 / Shipboard Waste Management						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWCCD, Bethesda, MD	122.524	12.000		12.000		12.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	NRL,Wash,DC	25.082	2.200		2.000		2.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	SPAWARSYSCEN,SD,CA	7.810	2.000		1.500		1.000		Cont	Cont	N/A
Process Control Engineering	C/CPFF	GSA/BAH, Arlington, VA	5.322	4.000		3.000		3.000		Cont	Cont	N/A
Developmental Test & Evaluation	WR	Misc. Govt Labs	22.232	0.500		0.500		0.500		Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	Geo-Centers, Inc,Bos.,MA	12.151	1.000	01/03	1.000	01/04	1.000	01/05	Cont	Cont	N/A
Developmental Test & Evaluation	C/CPFF	York Internat'l Corp,York,PA	12.000							0.000	12.000	12.000
Developmental Test & Evaluation	C/CPFF	Misc. Contracts	10.791	1.313	Var	1.033	Var	0.921	Var	Cont	Cont	N/A
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	N/A
Subtotal T&E			217.912	23.013		21.033		20.421		0.000	Cont	N/A
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel			0.150	0.050		0.050		0.050			Cont	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.150	0.050		0.050		0.050		0.000	Cont	
Remarks:												
Total Cost			303.376	28.163		25.283		24.171		Cont	Cont	Cont
Remarks:												

R-1 SHOPPING LIST - Item No. 67-9 of 67-26

EXHIBIT R4, Schedule Profile

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	S0401 / Shipboard Waste Management

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ozone Depleting Substances																																
HFC-236fa Backfit Kits for CFC-114 Air-Conditioning Plants	■	■	■	■																												
Alternative (Non-Vapor-Compression) Cooling Concepts	■	■	■	■	■	■	■	■	■	■	■	■																				
Non-ODS Fire Protection Systems	■	■	■	■	■	■	■	■																								
Lubrication and Engineering Problems for HFC-236fa Air-Conditioning Plants									■	■	■	■	■	■	■	■																
Integrated Liquid Wastes																																
Uniform National Discharge Standards (UNDS) Rulemaking	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
10-gpm Oil/Water Separator Polisher (OWS-10)	■	■	■	■	■	■	■	■																								
50-gpm Oil/Water Separator Polisher (OWS-50)	■	■	■	■	■	■	■	■																								
5-gpm Oil/Water Separator Polisher (OWS-5)	■	■	■	■	■	■	■	■																								
Advanced Oil Content Monitor (OCM)	■	■	■	■																												
Non-Oily Wastewater Treatment System / MPCD Treatment Systems	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Advanced Thermal Destruction System	■	■	■	■																												
Design Fixes for Compensated Fuel/Ballast Systems	■	■	■	■																												
Oil Pollution Abatement (OPA) System Improvements									■	■	■	■	■	■	■	■	■	■	■	■												
Solid Wastes																																
Submarine Plastics Waste Management	■	■	■	■	■	■	■	■																								
Advanced Thermal Destruction System	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■												
Hazardous and Other Major Ship Wastes																																
Hazardous Materials Substitution/Elimination	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Pollution Prevention Equipment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Test Reformulated Commercial Paints	■	■	■	■	■	■	■	■																								
Oil Spill Response Capabilities	■	■	■	■																												
Protected Marine Animals	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Low-Copper Hull Antifouling Coatings	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Underwater Hull Cleaning System	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■												
Environmental Information Management System (EIMS)					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

R-1 SHOPPING LIST - Item No. 67-10 of 67-26

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME S0401 / Shipboard Waste Management			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Not applicable.								

R-1 SHOPPING LIST - Item No. 67-11 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME W2210 / Environmental Compliance			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**4.451**	**2.896**	**0.767**	**0.894**	**0.934**	**1.153**	**1.197**	**0.960**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification: This project supports development and implementation of technologies which will lead to environmentally safe naval aviation operations and support; compliance with international, federal, state, and local regulations and policies; reduction of increasing compliance costs and personal liability; and enhancement of naval aviation mission readiness and effectiveness. This project will support aviation compliance and pollution prevention technologies as well as additional operational and shipboard aviation requirements previously unsupported. Specific regulatory requirements include Executive Orders 12856 (Pollution Prevention) and 12873 (Recycling & Waste Prevention), and 13148, the National Environmental Policy Act (NEPA), Clean Air Act (CAA) Title I, National Ambient Air Quality Standards (NAAQS), relating to pollutants aircraft contribute to base air emission limits (volatile organic compounds (VOCs), particulate matter (PM), oxides of nitrogen (NOx), oxides of sulfur (SOx), and unburned hydrocarbons (UHCs)), the National Emission Standards for Hazardous Air Pollutants (NESHAPs), the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), as well as Occupational,Safety and Health Administration (OSHA) standards.

W2210 legacy aircraft maintenance facility requirements were rebaselined to Project Y0817, Pollution Abatement Ashore, beginning in FY 04.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	W2210 / Environmental Compliance

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.037	1.086	0.000	0.000
RDT&E Articles Quantity				

Alternative Maintenance Processes: Research, develop, and test alternatives to aircraft and propulsion systems maintenance processes that use toxic heavy metals, hazardous air pollutants (HAPs) and Volatile Organic Compounds (VOCs). Objectives include formulation and certification of newly developed aircraft coatings including paint primers, topcoats, cadmium and chromium electroplating replacements, high velocity oxy-fuel (HVOF), pre- and post-treatments, and anodize coatings. Additional objectives include; maintaining expertise in and execution of flight test and evaluation of low-VOC bonding, petroleum distilate (PD) solvent, conversion coatings, aluminum manganese (Al/Mn) coatings and alternative weapons materials and processes.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.378	0.000	0.000	0.000
RDT&E Articles Quantity				

Aircraft Launch and Recovery Equipment (ALRE) Technologies: Develop and demonstrate environmentally acceptable aircraft launch and recovery equipment (ALRE) technologies. Objectives include the validation of a redesigned ALRE piston and lubrication system.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.036	1.810	0.527	0.664
RDT&E Articles Quantity				

Engine Emissions Technology: Research, develop and test low emissions technology for gas turbine engines. Objectives include test, demonstrate and validate jet fuel additives for pollution prevention and compliance, gas turbine engine particulate matter measurement and testing technology, and low emissions combustor technology.

R-1 SHOPPING LIST - Item No. 67-13 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	W2210 / Environmental Compliance

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.240	0.230
RDT&E Articles Quantity				

Aircraft Hazardous Materials and Shipboard Waste Reduction: Research, develop and test alternatives to aircraft and propulsion and power systems manufacture, finishing and repair processes that generate toxic heavy metals, hazardous air pollutants (HAPs) and volatile organic compounds (VOCs). Objectives include the test, demonstration and validation of aircraft structural stainless steels, long life lead and cadmium free aircraft batteries and shipboard validation of corrosion repair kits.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 67-14 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	W2210 / Environmental Compliance

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	4.571	4.890	4.962	5.157
Current BES/President's Budget	4.451	2.896	0.767	0.894
Total Adjustments	-0.120	-1.994	-4.195	-4.263
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.017		
Congressional rescissions	-0.010			
SBIR/STTR Transfer	-0.001			
Economic Assumptions	-0.013	-0.058	-0.023	-0.020
Reprogrammings	-0.096			
Other program adjustments		-1.919	-4.172	-4.243
Congressional increases				
Subtotal	-0.120	-1.994	-4.195	-4.263

Schedule:

Not applicable

Technical:

Not applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	W2210 / Environmental Compliance

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Related RDT&E:										
PE0603851D (Environmental Security Technolog Certification Program)	0.900	0.750	0.950	0.750						
PE0602121N (Ship, Submarine and Logistics Technology)	0.150									
PE060223N (Readiness/Training/Environmental Quality)										
PE0603716D (Strategic Environmental R&D Program)										

E. 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.

F. MAJOR PERFORMERS:

Major Performer	Location	Description of Work	FY03 Amount & Award Date	FY04 Amount & Award Date	FY05 Amount & Award Date
NAWC AD PAX RIVER	MD	Project management, research, development and evaluation.	1.270 10/02	.400 10/03	.500 10/04
GE	Lynn, MA	Aircraft engine research, development and test	1.500 9/03	.350 9/04	.350 9/05

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME Y0817 / Pollution Abatement			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**9.341**	**10.286**	**4.077**	**6.750**	**7.694**	**9.310**	**9.482**	**9.661**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) 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 eight thrust areas. Thrust areas were changed in FY01 to better align the tasks with technical area needs resulting from shoreside requirements and two thrust areas were added in FY04.

(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. SIMA tasks have been selected based on compliance and pollution prevention studies conducted for the Naval Station Mayport SIMA as part of the Navy Environmental Leadership Program (NELP).

(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 selected based on the ordnance environmental requirements study conducted in partnership with the Navy's Ordnance Environmental Specialty Office (OESO).

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

(U) INSTALLATION RESTORATION

(U) Tasks in this thrust address requirements to reduce the Navy's cost and liabilities associated with the cleanup of contaminated sites at Naval activities. Tasks evaluate alternative site characterization, remediation, and monitoring technologies for the over 1000 Navy sites requiring cleanup and restoration under Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA). Due to funding reduction, investment in this thrust area will be eliminated in FY04 with the exception of outyear tasks to reduce long term monitoring costs. The Navy will rely on demonstrations conducted by other Federal agencies, such as EPA, as well as academia to validate innovative technologies for terrestrial site cleanup.

(U) ENVIRONMENTAL EFFECTS OF UNDERWATER UXO

(U) The thrust is new for FY04 based on results of the Initiation Decision Report (IDR) completed on Environmental Effects of Underwater UXO in FY02. The tasks in this thrust support the requirements for addressing the transport, fate, and effects of underwater UXO needed to support scientifically valid decisions.

(U) AVIATION MAINTENANCE AND SUPPORT

(U) This thrust is new for FY04. The tasks in this thrust will reduce the shoreside environmental impacts of aviation operations and maintenance at air bases and depots. Specific tasks will be from transfer of shoreside efforts under Project W2210 based on a review to occur in FY03.

(U) COASTAL CONTAMINATION AND CONTAMINATED SEDIMENTS

(U) This thrust area was created in FY02. 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. Due to funding reduction in FY04, new tasks will be delayed to outyears.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Ship Maintenance/Repair/Pierside	2.309	0.945	0.132	0.550
RDT&E Articles Quantity				

FY 02: Completed development of Automated Paint Application with Overspray Capture and Treatment. Completed development of Air Emission Reduction from Shipyard Cutting and Arc-Gouging Operations. Completed development and demonstration of Collection and Treatment of Compwater. Completed evaluation of Advanced Oil Spill Response Equipment. Initiated 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).
FY 03: Complete demonstration of Coating Removal from Delicate Substrates. Continue SIMA tasks for improved painting operations.
FY 04: Complete SIMA tasks for improved painting operations.
FY 05: Initiate task to evaluate fouling resistant permanent booms.

	FY 02	FY 03	FY 04	FY 05
Ordnance Testing/Manufacture/Disposal	1.583	1.674	0.285	0.481
RDT&E Articles Quantity				

FY 02: Completed testing of pilot Exhaust Scrubber for Static Testing of Small Rocket Motors. Continued development of Confined Burn Facility (CBF): completed design of 80lb CBF pilot facility.
FY 03: Complete 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. Initiate task to evaluate Navy Training Lands Sustainability and prepare Initiation Decision Report (IDR).
FY 04: Continue development of Confined Burn Facility (CBF): Complete construction and checkout and develop documentation for transition to other funding sources. Task will not be funded under Y0817 after FY04 due to funding reductions. Initiate Navy Training Lands Sustainability tasks based on IDR.
FY 05: Continue Navy Training Lands Sustainability tasks. Initiate Enhanced Recycle of Range Scrap Ordnance.

R-1 SHOPPING LIST - Item No. 67-19 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Industrial Operations and Maintenance	2.308	2.643	0.903	1.805
RDT&E Articles Quantity				

FY 02: Conducted demonstration of Reduced Air Emissions from Diesel Engines. Completed field demonstration of Biological Detoxification of Oily Sludges. Continued evaluation of Catalysts for Advanced Oxidation Processes (AOP). Conducted field demonstrations for noise reduction of JETC. Initiated tasks for Pollution Prevention (P2) of shoreside industrial operations that address high cost and Notice of Violation (NOV) issues, including Improved Best Management Practices (BMPs) for Stormwater Runoff, By-pass Filter for Optimized Oil Change Intervals, and Reduction of Solvent Based Paints.
FY 03: Conduct demonstrations at IMC test facility. Complete demonstration of Catalysts for Advanced Oxidation Processes (AOP). Continue tasks for P2 of shoreside industrial operations. Conduct demonstration of Improved BMPs for Stormwater Runoff. Initiate task to evaluate cleaning solvents for 21st century.
FY 04: Complete demonstration of alternative AFFF. Complete demonstration of technologies for optimized oil change intervals. Complete Reduction of Solvent Based Paint task. Continue evaluation of new cleaning solvents.
FY 05: Complete Task to Evaluate Cleaning Solvent of 21st Century

	FY 02	FY 03	FY 04	FY 05
Installation Restoration	0.876	1.013	0.000	0.000
RDT&E Articles Quantity				

FY 02: Developed protocol for assessing potential risks to amphibians at Navy sites. Initiated tasks for improving and optimizing remediation strategies including Zero Valent Iron Injection Demonstration and In Situ Abiotic Reductive Dechlorination with Bi-metallic Nanoparticles. Initiated task to develop Trace Analysis of Perchlorate in Environmental Samples.
FY 03: Complete development of in-situ sensor for MTBE. Complete and continue demonstrations efforts for improved remediation. Complete demonstration/validation of Trace Analysis of Perchlorates in Environmental Samples.
FY 04: All efforts completed.
FY 05: All efforts completed.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Coastal Contamination and Contaminated Sediments	1.499	2.759	0.403	1.003
RDT&E Articles Quantity				

FY 02: Completed demonstration of Biogeochemical Fingerprinting for sediment management. Continued development of Methods to Assess Subsurface Contaminant Migration from Coastal Landfills. Completed Initiation Decision Report (IDR) for evaluations of Fate/Effect of Underwater Unexploded Ordnance (UXO). Initiated tasks to assess degradation and toxicity of ordnance compounds in sediments as identified in the IDR. Initiated tasks to evaluate UXO transport and casing corrosion. Initiated site-specific validation methodologies for in-place sediment management.
FY 03: Complete development of Methods to Assess Subsurface Contaminant Migration from Coastal Landfills. Continue site-specific validation methodologies for in-place sediment management. Continue tasks for evaluations of Fate/Effect of Underwater UXO. Initiate task for evaluating Sediment Transport.
FY 04: Complete site-specific validation methodologies for in-place sediment management. Continue task for evaluating Sediment Transport
FY 05: Continue task for evaluating Sediment Transport.

	FY 02	FY 03	FY 04	FY 05
Emissions Detection and Monitoring	0.766	1.252	0.207	0.630
RDT&E Articles Quantity				

FY 02: Completed demonstration of Real-Time Monitoring of Copper Effluents from dry-dock operations. Completed validation of portable Leak Detections system for Fuel Farms. Completed demonstration of air modeling capability using south coast air basin as case study. Initiated improved monitoring for stormwater assessment.
FY 03: Conduct case study simulations using Navy air modeling capability. Continue improved monitoring for stormwater assessment.
FY 04: Complete improved monitoring for stormwater assessment.
FY 05: Initiate Task for Improved Sensors using Molecular Imprinting and Lab-on-a-Chip Technologies

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Environmental Effects of Underwater Ordnance	0.000	0.000	0.845	1.072
RDT&E Articles Quantity				

FY 04: The thrust is new for FY04 based on results of the Initiation Decision Report (IDR) completed on Environmental effects of Underwater UXO in FY02. The tasks in this thrust support the requirements for addressing the transport, fate, and effects of underwater UXO needed to support scientifically valid decisions. Continue toxicity and degradation studies of ordnance and explosives in marine environment. Continue UXO casing corrosion evaluation. Continue evaluation of UXO transport in marine sediments.
FY 05: Continue Toxicity and Degradation Study of Ordnance in Marine Sediments. Complete UXO Casing Corrosion. Complete UXO Transport Evaluation.

	FY 02	FY 03	FY 04	FY 05
Aviation Maintenance & Support	0.000	0.000	1.302	1.209
RDT&E Articles Quantity				

FY 04: This thrust is new for FY04. Tasks will be from transfer of shoreside efforts under Project W2210 based on review to occur in FY03. Continue and complete legacy W2210 aircraft maintenance projects. Complete chrome electroplating replacements for actuators and zero VOC adhesive bonding (Sol-Gel). Continue non-chromated post treatments and cold immersion tank paint strippers. Initiate aviation systems coating technology (zero VOC self-priming topcoat, zero VOC primers).
FY 05: Complete Non-chromated Post Treatments. Initiate non-pollution aircraft de-icing. Initiate aviation systems coating technology (zero VOC self-priming topcoat, zero VOC primers).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	9.580	10.518	10.720	10.628
Current BES/President's Budget:	9.341	10.286	4.077	6.750
Total Adjustments	-0.239	-0.232	-6.643	-3.878
Summary of Adjustments				
Congressional program reductions			-3.644	-2.161
Congressional rescissions				
SBIR				
Economic assumptions	-0.047	-0.059		
Other program adjustments	-0.192	-0.173	-2.999	-1.717
Subtotal	-0.239	-0.232	-6.643	-3.878

Schedule:

Not applicable.

Technical:

Not applicable.

R-1 SHOPPING LIST - Item No. 67-23 of 67-26

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603721N / Environmental Protection	Y0817 / Pollution Abatement

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

P-1 Procurement Line Item No. & Name. Not Applicable.
C-1 MILCON Project No. & Name. Not Applicable.
(U) RELATED RDT&E: This project transitions 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 projecjts. Execution of this project is coordinated with related Army and Air Force programs by the Tri-Service Envrionmental 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)

E. ACQUISITION STRATEGY: *

(U) This project is categorized as Non-ACAT (Non Acquisition). The project delivers a broad spectrum of products that require a variety of acquisition processes to implement. Equipment products for Naval stations and other mission funded activities costing over 100K are often procured centrally through the Navy Pollution Prevention Equipment Program (PPEP) where as equipment products for Shipyards and other Navy Working Capital Fund (NWCF) activities costing over 100K are procured through their Capital Purchases Program (CPP). For both types of activities, equipment products costing less than 100K, and process changes not requiring the purchase of new equipment such as consumable material or product substitutions, are funded through the activity's operating budgets. Occasionally there is a technology that must be implemented as a specialized facility. These are acquired through the Military Construction (MCON)

F. MAJOR PERFORMERS: **

Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA; SPAWAR Systems Center, San Diego, CA; Naval Surface Warfare Center, Carderock Division, MD; Naval Surface Warfare Center, Indian Head Division, MD; and Naval Air Warfare Center, Aircraft Division, Patuxant River, MD.

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME Y0817 / Pollution Abatement						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ship Maint/Repair/&Pierside Support	WR/PO	NSWC/CD	9.841	0.741	varies	0.050	varies	0.135	varies	Continuing	Continuing	N/A
Ship Maint/Repair/&Pierside Support	WR/PO	NFESC	4.836	0.204	varies	0.082	varies	0.415	varies	Continuing	Continuing	N/A
Ordnance Testing/Manufact/Disp	WR/PO	NSWC/IH	14.506	1.160	varies	0.285	varies	0.000	varies	Continuing	Continuing	N/A
Ordnance Testing/Manufact/Disp	WR/PO	NFESC		0.514				0.481				
Industrial Operations & Maintenance	WR/PO	NFESC	13.960	2.643	varies	0.903	varies	1.805	varies	Continuing	Continuing	N/A
Industrial Operations & Maintenance	WR/PO	SSC/SD	7.576	0.000	varies	0.000	varies	0.000	varies	Continuing	Continuing	N/A
Installation Restoration	WR/PO	NFESC		1.013	varies	0.000	varies	0.000	varies	Continuing	Continuing	N/A
Coastal Contam/Contaminated Sed	WR/PO	SSC/SD		1.160	varies	0.403	varies	1.003	varies	Continuing	Continuing	N/A
Coastal Contam/Contaminated Sed	WR/PO	NFESC		1.599	varies	0.000	varies	0.000	varies	Continuing	Continuing	N/A
Emissions Detection/Monitoring	WR/PO	SSC/SD		0.705	varies	0.207	varies	0.000	varies	Continuing	Continuing	N/A
Emissions Detection/Monitoring	WR/PO	NFESC		0.547	varies	0.000	varies	0.630	varies	Continuing	Continuing	N/A
Env. Effects of Underwater UXO	WR/PO	NFESC				0.645	varies	0.722	varies	Continuing	Continuing	N/A
Env. Effects of Underwater UXO	WR/PO	SSC/SD				0.200	varies	0.350	varies	Continuing	Continuing	N/A
Aviation Maintenance and Support	WR/PO	NSWC PAX				0.845	varies	1.209	varies	Continuing	Continuing	N/A
Aviation Maintenance and Support	WR/PO	NFESC				0.457	varies	0.000	varies	Continuing	Continuing	N/A
Subtotal Product Development			50.719	10.286		4.077		6.750		0.000	71.832	

Remarks:
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.

Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: Included in Product Development costs.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE0603721N / Environmental Protection				PROJECT NUMBER AND NAME Y0817 / Pollution Abatement						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			50.719	10.286		4.077		6.750		0.000	71.832	
Remarks:												

R-1 SHOPPING LIST - Item No. 67-26 of 67-26

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R0829 Energy Conservation (ADV)	2,714	2,796	-	-	-	-	-	-
R0838 Mobility Fuels (ADV)	2,043	2,154	1,713	1,880	1,928	2,323	2,366	2,410
R2868 Proton Exchange Membrane (PEM) Fuel Cells	1,921	4,401	-	-	-	-	-	-
R9206 Plasma Energy Pyrolysis	-	3,913	-	-	-	-	-	-
R9207 Thermally Activated Chiller/Heater	-	1,711	-	-	-	-	-	-
Total	6,678	14,975	1,713	1,880	1,928	2,323	2,366	2,410

A. 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. 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 Naval Operations to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

B. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget Submission:	6,963	5,060	5,156	5,286
Adjustments from FY 2003 President's Budget:				
Congressional Plus-Ups		10,250		
FY2002 SBIR	-152			
Post-Production R&D Continuation			-263	-332
NWCF Rate Adjustment			-10	-7
Non - S&T R&D Offset			-183	
ACTD Offsets			-31	-36
Execution Adjustment	-99	-23		
Cong. Rescissions/Adjustments/Undist.Reductions	-34	-150		
Pay Raise/Inflation Adjustments		-162	-39	-40
Program Termination			-2,917	-2,991
FY 2004/2005 President's Budget Submission:	6,678	14,975	1,713	1,880

PROGRAM CHANGE SUMMARY EXPLANATION:

Schedule: Not applicable
Technical: Project R0829 terminates in FY04.

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0829
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Energy Conservation (ADV)

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R0829 Energy Conservation (ADV)	2,714	2,796	-	-	-	-	-	-

A. 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.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
Shipboard Energy Conservation	2,114	2,796	-	-

This effort improves the energy efficiency of Navy ships by developing more efficient shipboard machinery and electrical systems and improved hull drag reducing technologies.

FY 2002 ACCOMPLISHMENTS:

- Screened candidate self-polishing copper/cobiocide hull coatings and applied best two to test ships for full scale trials.
- Completed LSD stern flap model tests and designed full scale flap for ship trial via PE 0604710N.
- Developed algorithms to link gas turbine digital engine, fuel and variable stator vane controls to optimize fuel consumption at all operating conditions for both propulsion and auxiliary power plants.
- Designed and procured variable speed drives for 2000 gallon per minute five pumps (LHA/LHD class) and LM2500 gas turbine engine cooling module fans.

FY 2003 PLANS:

- Complete full scale ship trials of self-polishing copper/cobiocide hull coatings.
- Complete development and testing of fuel consumption optimization algorithms for digital gas turbine engine control systems.
- Complete development and testing of variable speed drives for 2000 gallon per minute five pumps and LM2500 gas turbine engine cooling module fans.

FY 2004 PLANS: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

Project Number: R0829
Project Title: Energy Conservation (ADV)

FY 2005 PLANS: Not applicable

	FY 02	FY 03	FY 04	FY 05
Aircraft Energy Conservation	600	-	-	-

This effort improved the fuel efficiency of Naval aircraft by developing improved components and materials for retrofit to existing aircraft engines.

FY 2002 ACCOMPLISHMENTS:

- Instrumented and tested a new high pressure compressor and turbine which was designed by this program and manufactured with GE Internal Research and Development funds. These components will be installed in the GE23a demonstration engine and are intended for use in growth versions of the F414 (F/A18-E/F) engine.

FY 2003 PLANS: Not applicable

FY 2004 PLANS: Not applicable

FY 2005 PLANS: Not applicable

C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:
PE 0601153N (Defense Research Sciences)
PE 0602236N (Warfighter Sustainment Applied Research)
PE 0603236N (Warfighter Sustainment Advanced Technology)
PE 0603513N (Shipboard Systems Component Development)
PE 0603573N (Advanced Surface Machinery Systems)
PE 0603721N (Environmental Protection)
PE 0604710N (Navy Energy Program (ENG))

NON-NAVY RELATED RDT&E: Not applicable

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0829
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Energy Conservation (ADV)

A. PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 2002	FY 2003	FY 2004	FY 2005
a. System Development and Integration	2,714	2,796	-	-

B. BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: Not applicable.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0838
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Mobility Fuels (ADV)

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R0838 Mobility Fuels (ADV)	2,043	2,154	1,713	1,880	1,928	2,323	2,366	2,410

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides data through engine and fuel system tests which relate the effects of changes in Navy fuel procurement specification properties to the performance and reliability of Naval ship and aircraft engines and fuel systems. This information is required to: (a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military specification fuels are unavailable or in short supply; and (c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry. Recent problems with fuel quality have adversely affected ship and aircraft system performance and reliability and resulted in degradation of fuel in storage. The resulting readiness impacts, additional maintenance costs, and the cost of lost equipment, although difficult to quantify, are many times the cost of this 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.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
Ship Fuels	976	1,100	980	1,050

Performs development, test and evaluation work for Navy ship fuels to: (a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (b) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military 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.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0838
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Mobility Fuels (ADV)

FY 2002 ACCOMPLISHMENTS:

- Continued 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. Test results will be used to specify minimum lubricity levels and test methods to be used for fuel acceptance.
- Continued evaluation of lubricity enhancing additives for use with Navy distillate fuels.
- Initiated 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).
- Initiated development of a commercial fuel specification that will satisfy Navy ship fuel requirements.

FY 2003 PLANS:

- 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 assessment of the feasibility of specifying JP-5 as the single fuel for use by all Naval Systems (ships, aircraft and ground equipment).
- Complete the evaluation of lubricity enhancing additives for use with Naval distillate fuels.
- Initiate review of F-76 Naval ship fuel specification and test requirements to determine and remove any unnecessary requirements to increase availability.
- Continue development and acceptance of a commercial fuel specification.

FY 2004 PLANS:

- Conduct field trial of JP-5 single fuel initiative.
- Complete F-76 specification and test requirements evaluation to determine and remove any unnecessary requirements to increase availability.
- Complete development and acceptance of commercial fuel specification.
- Initiate development of an equipment/fuel qualification procedure to evaluate utilization of synthetic and ultra clean, low sulfur fuels.

FY 2005 PLANS:

- Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra clean, low sulfur fuels.
- Initiate development of sensors and instruments to determine composition of blended marine gas oils, diesel fuels and jet fuels.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)
Project Number: R0838
Project Title: Mobility Fuels (ADV)

	FY 02	FY 03	FY 04	FY 05
Aircraft Fuels	1,067	1,054	733	830

Performs development, test and evaluation work on Navy aircraft fuels to: (a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (b) provide guidance to fleet operators for the safe use of military aircraft fuels that include new additives or are from new sources including synthetics; 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.

FY 2002 ACCOMPLISHMENTS:

- Completed 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 JP-5 specification requirements and specification test review to determine and remove unnecessary requirements and increase worldwide availability.
- Evaluated prototype shipboard fuel contamination and free water detection equipment.
- Continued T45 +100 additive field evaluation.

FY 2003 PLANS:

- Continue development and evaluation of fuel copper contamination removal system.
- Complete JP-5 specification and test method review.
- Complete JP-5 +100 fuel T45 field evaluation.
- Conduct shipboard trial of in-line automated fuel contamination and free water detection equipment.
- Evaluate impact of +100 additive on reducing aircraft emissions.

FY 2004 PLANS:

- Field trial fuel copper contamination removal system.
- Initiate development of an equipment/fuel qualification procedure to evaluate and approve utilization of synthetic aircraft fuels.

FY 2005 PLANS:

- Continue the development of a qualification procedure to evaluate and approve utilization of synthetic fuels.
- Initiate the development and evaluation of shipboard compatible stability and performance improving additives.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0838
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Mobility Fuels (ADV)

C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:
PE 0601152N (In-House Laboratory Independent Research)
PE 0205633N (Aviation Improvements)

NON-NAVY RELATED RDT&E: Not applicable

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N Project Number: R0838
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV) Project Title: Mobility Fuels (ADV)

A. PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 2002	FY 2003	FY 2004	FY 2005
a. Reliability, Maintainability and Availability	2,043	2,154	1,713	1,880

B. BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: Not applicable.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603724N
PROGRAM ELEMENT TITLE: Navy Energy Program (ADV)

Project Number: R2868
Project Title: Various Congressional Plus-Ups

Congressional Plus-Ups:

R2868	FY 02	FY 03
Proton Exchange Membrane (PEM) Fuel Cells	1,921	4,401

Demonstrate PEM fuel cells from domestic manufactures at Department of the Navy installations.

R9206	FY 02	FY 03
Plasma Energy Pyrolysis (PEPS)	-	3,913

Demonstrate plasma energy pyrolysis technology to destroy waste aboard Navy ships.

R9207	FY 02	FY 03
Thermally Activated Chiller/Heater	-	1,711

Assess the suitability of thermally activated chiller/heater units for use at the Department of the Navy shore installations.

EXHIBIT R4, Schedule Profile Not Applicable																																
DATE: February 2003																																
APPROPRIATION/BUDGET ACTIVITY BA 4									PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program (ADV)												PROJECT NUMBER AND NAME R0829/Energy Conservation (ADV)											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																

R-1 Line - Item 68

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

Exhibit R-4a, Schedule Detail Not Applicable					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY BA 4	PROGRAM ELEMENT 0603724N				PROJECT NUMBER AND NAME R0829/Energy Conservation (ADV)			
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - R-1 Line - Item 68

EXHIBIT R4, Schedule Profile Not Applicable																																
DATE: February 2003																																
APPROPRIATION/BUDGET ACTIVITY BA 4									PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program (ADV)												PROJECT NUMBER AND NAME R0838/ Mobility Fuels (ADV)											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																

R-1 Line - Item 68

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

Exhibit R-4a, Schedule Detail Not Applicable					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY BA 4	PROGRAM ELEMENT 06036724N				PROJECT NUMBER AND NAME R0838/Mobility Fuels (ADV)			
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - R-1 Line - Item 68

EXHIBIT R4, Schedule Profile Not Applicable																																
DATE: February 2003																																
APPROPRIATION/BUDGET ACTIVITY BA 4									PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program (ADV)												PROJECT NUMBER AND NAME R2868/ Proton Exchange Membrane (PEM) Fuel Cells											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																

R-1 Line - Item 68

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

Exhibit R-4a, Schedule Detail Not Applicable					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY BA 4	PROGRAM ELEMENT 0603724N				PROJECT NUMBER AND NAME R2868/Proton Exchange Membrane (PEM) Fuel Cells			
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - R-1 Line - Item 68

EXHIBIT R4, Schedule Profile Not Applicable																																
DATE: February 2003																																
APPROPRIATION/BUDGET ACTIVITY BA 4									PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program (ADV)												PROJECT NUMBER AND NAME R9206/ Plasma Energy Pyrolysis											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																

R-1 Line - Item 68

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

Exhibit R-4a, Schedule Detail Not Applicable						DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY BA 4	PROGRAM ELEMENT 0603724N				PROJECT NUMBER AND NAME R9206/Plasma Energy Pyrolysis			
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - R-1 Line - Item 68

EXHIBIT R4, Schedule Profile Not Applicable																																
DATE: February 2003																																
APPROPRIATION/BUDGET ACTIVITY BA 4									PROGRAM ELEMENT NUMBER AND NAME 0603724N/Navy Energy Program (ADV)												PROJECT NUMBER AND NAME R9207/ Thermally Activated Chiller/Heater											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

R-1 Line - Item 68

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

Exhibit R-4a, Schedule Detail Not Applicable					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY BA 4	PROGRAM ELEMENT 0603724N				PROJECT NUMBER AND NAME R9207/Thermally Activated Chiller/Heater			
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - R-1 Line - Item 68

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								February 2003
Appropriation/Budget Activity **RDT&E.A BA4**				R-1 Item Nomenclature: 0603725N/ Facilities Improvement				
COST ($ in millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**1.670**	**3.300**	**1.440**	**1.567**	**1.570**	**1.872**	**1.906**	**1.941**
Y0995 Facilities System	**1.670**	**2.077**	**1.440**	**1.567**	**1.570**	**1.872**	**1.906**	**1.941**
Y9208 Photovoltaic Energy Park*	**0.000**	**1.223**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. Mission Description and Budget Item Justification:

(U) This program provides the Navy with new civil engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available resources on satisfying facility requirements where the Navy is the stakeholder. There are no test validated Commercial off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which includes the National Science foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facilities requirements during the fiscal years FY 2002 through FY 2005: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Sustainment, Restoration and Modernization and Modular Hybrid Pier for reducing the total ownership cost of future facilities. 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."

*Project Y9208 is a Congressional add.

B. Program Change Summary:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	1.713	2.124	1.819	1.856
Current BES/President's Budget:	1.670	2.077	1.440	1.567
Total Adjustments	-0.043	-0.047	-0.379	-0.289
Summary of Adjustments				
Post-Production R&D Continuation	0.000	0.000	-0.214	-0.269
SBIR/STTR Transfer	-0.034	0.000	0.000	0.000
NWCF Rates Naval Fac Eng Ser	0.000	0.000	0.047	0.046
Non-S&T R&D Offset	0.000	0.000	-0.154	0.000
ACTD offsets	0.000	0.000	-0.025	-0.032
Miscellaneous Inflation	0.000	0.000	0.000	-0.034
Nonpay Purchase Inflation	0.000	0.000	-0.025	0.000
Nonpay Inflation	0.000	0.000	-0.008	0.000
Business Process Reform	0.000	-0.008	0.000	0.000
IT Cost Growth	0.000	-0.004	0.000	0.000
Inflation Savings	0.000	-0.023	0.000	0.000
Revised Economic Assumptions	-0.009	-0.012	0.000	0.000
Subtotal	-0.043	-0.047	-0.379	-0.289

C. Other Program Funding Summary: Provided in R-2a.

D. Acquisition Strategy: Provided in R-2a.

E. Schedule Profile: Provided in R-4.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME Program Element (PE) No. and Name				PROJECT NUMBER AND NAME Y0995/ Facilities System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.670**	**2.077**	**1.440**	**1.567**	**1.570**	**1.872**	**1.906**	**1.941**
RDT&E Articles Qty	**8**	**2**	**3**	**4**	**TBD**	**TBD**	**TBD**	**TBD**

A. Mlission Description and Budget Item Justification:

(U) This program provides the Navy with new civil engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available resources on satisfying facility requirements where the Navy is a major stakeholder. There are no test validated Commercial off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which includes the National Science foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facilities requirements during the fiscal years FY 2002 through FY 2005: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Sustainment, Restoration and Modernization and Modular Hybrid Pier. The execution of this program is consistent with the findings and recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities."

(U) WATERFRONT FACILITIES REPAIR AND UPGRADE

(U) Over 75% of the Navy's waterfront facilities are over 45 years old. They were designed for a service life of 25 years and to satisfy the mission requirements existing at that time. The over aged reinforced concrete requires costly and repetitive repairs. In addition, to accomplish more pier side ship maintenance and thus reduce drydock costs, these piers must be strengthened to support concentrated crane loads up to 140 tons when they were originally designed for no concentrated loads. This sub-project addresses new materials and design methods to extend the service life of existing waterfront facilities by an additional 15 or more years, and conventional concrete patches and composite-enhanced repairs respectively; new longer-lasting low-maintenance fendering systems that eliminate the need for the frequent replacement of timber piles, fenders, a new Impluse Load Method (ILM) for accurately and quickly determining the vertical load capacity of piers and wharves, a new Swinging Weight Defelctometer (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.

(U) FACILITY TECHNOLOGIES TO REDUCE THE COST OF SUSTAINMENT, RESTORATION AND MODERNIZATION (SRM)

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Facilities Improvement / PE0603725N	Y0995/ Facilities System

(U) MODULAR HYBRID PIER (MHP)

(U) Modular Hybrid Pier started in FY 02 to achieve completions required by construction acquisition schedules.

The Navy is faced with the necessity of recapitalizing a large portion of its waterfront infrastructure over the next several decades. The Modular Hybrid pier initiative develops and validates innovative material and design technologies for a mission-flexible waterfront infrastructure characterized by significantly reduced total ownership cost and increased mission flexibility. The proceeding sub-project Waterfront Facilities Repair and Upgrade will enable the Navy to economically extend the useful service life of existing piers and wharves. While reducing the need for immediate replacement, eventual replacement will be required. This MHP sub-project provides improved technology for new piers. Emerging innovative structural and materials technologies, particularly those that will transition from the Navy's applied research and advanced development program, will provide enhanced-capability; structures that have a comparable initial cost yet have far less maintenance and repair costs. Use of advanced materials and high performance lightweight concrete will produce structures that have twice the economic service life of the conventional piers. Modular design will enable off-site fabrication in pre-cast plants that will shorten the duration and lower the cost relative to conventional on-site construction. Plant fabrication will vastly improve repair-free durability because of superior quality control and application of high performance concrete and post-tensioning technologies. The modular concept will facilitate change-out of components for modifications to increase or capacity to adapt to future in ship designs. Mobility/relocatability of barge size modules through flotation is a significant new capability option 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. The MHP will have superior operational benefits to ship/port operations.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Facilities Improvement / PE0603725N	Y0995 / Facilities System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Waterfront Repair and Upgrade	0.150	0.000	0.100	0.400
RDT&E Articles Quantity	1		1	1

FY 02: Successfully completed test and evaluation of pier repair and strengthening systems at SUBASE Bangor Marginal Wharf.
FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for consrtruction acquisition.
FY 04: Complete validation testing and evaluation of Swinging Weight Deflectometer (new capability) method for determining the remaining strength of piers to resist lateral loads from berthing ships. Initiate testing of agents to reduce corrosion inducing chloride ion penetration rates.
FY 05: Continue testing of agents to reduce corrosion inducing chloride ion penetration rates. Initiate testing of sensors for real time monitoring of load safety to increase capacity of aged structures to support ship support and intermediate maintenance.

	FY 02	FY 03	FY 04	FY 05
Sustainment, Restoration & Moderization Tech Redu	0.664	0.000	0.300	0.667
RDT&E Articles Quantity	7			3

FY 02: Completed testing or roof inspection and assessment methodology at NAVSTA Bremerton. Completed demonstration of new NDE for measuring depth of embedment of concrete foundation piles. Completed performance testing of marine concrete with high-fly-ash content. Conducted laboratory tests of high heat resistant A/C pavement joint sealant under simulated aircraft exhaust heat and blast. Continued lab testing of durable coatings for steel in the splash zone. Demonstrated method of encapsulating piles below mudline to mediate effects of alkali silica reaction and delayed ettringite formation. Conducted demonstration test of acrylic elastomeric coatings for steel. Initiated lab testing of flexible (non-cracking) airfield pavement marking paints.
FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.
FY04: Complete field (validation) testing of high temperature pavement joint sealants. Continue testing of pile encasement to extend life of decomposing concrete. Continue testing (interim validation) of acrylic elastomeric coating of steel. Continue testing (interim validation) of flexible (non-cracking) marking paint for bituminous airfield pavements.
FY05: Continue field (validation) testing of durable coatings for steel in the splash zone. Complete field (validation) testing of pile encasement to extend life of decomposing concrete. Complete field (validation) testing of acrylic elastomeric coating of steel. Complete field (validation) testing of flexible marking paint for bituminous airfield pavements. Initiate DEMVAL testing of diagnostics technologies for objective and efficient facilities condition measurements and assessment; Includes systems, such as safety condition testing of bollards, concrete micro crack detection and condition measuring of piles, that will provide objective quantitative data to new engineering management systems such as "Wharfer" to be used Navy-wide to rate facility condition.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Facilities Improvement / PE0603725N	Y0995 / Facilities System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Modular Hybrid Pier	0.856	2.077	1.040	0.500
RDT&E Articles Quantity		2	2	

FY 02: Drafted Test & Evaluation Master Plan (TEMP), formed working integrated product team (WIPT), designed test structure to demonstrate structural performance and component durability and to avalidate analytical models.
FY 03: Fabricate two floating modules for test structure. Complete test structure mooring design. Initiate demonstration of constructability and attainment of quality for high performance marine concrete, demonstrate ability to hold strict tolerances, module assembly and mooring integration..
FY 04: Complete construction of test structure mooring and moor modules. Initiate structural and hydrodynamic tests on demonstration structure (assembled modules and moorings). Install and test shore access ramp and support bearings for required strength and rotational/traditional capabilities.
FY 05: Continue DT/OT of critical subassemblies. Complete data analyses and documentation of DEMVAL tests and transition to engineering criteria and specifications for construction acquisition.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Facilities Improvement/ PE0603725N	Y0995 / Facilities System

C. Program Change Summary:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	1.713	2.124	1.819	1.856
Current BES/President's Budget:	1.670	2.077	1.440	1.567
Total Adjustments	-0.043	-0.047	-0.379	-0.289
Summary of Adjustments				
Post-Production R&D Continuation	0.000	0.000	-0.214	-0.269
SBIR/STTR Transfer	-0.034	0.000	0.000	0.000
NWCF Rates Naval FAC Eng Ser	0.000	0.000	0.047	0.046
Non-S&T R&D Offset	0.000	0.000	-0.154	0.000
ACTD Offsets	0.000	0.000	-0.025	-0.032
Miscellaneous Inflation	0.000	0.000	0.000	-0.034
Nonpay Purchse Inflation	0.000	0.000	-0.025	0.000
Nonpay Inflation	0.000	0.000	-0.008	0.000
Business Process Reform	0.000	-0.008	0.000	0.000
IT Cost Growth	0.000	-0.004	0.000	0.000
Inflation Savings	0.000	-0.023	0.000	0.000
Revised Economic Assumpions	-0.009	-0.012	0.000	0.000
Subtotal	-0.043	-0.047	-0.379	-0.289

Schedule: Not applicable.
Technical: Not applicable.

R-1 SHOPPING LIST - Item No. 69-6 of 69-14

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	Facilities Improvement / PE0603725N	Y0995 / Facilities System

D. Other Program Funding Summary:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

P-1 Procurement Line Item No. & Name. Not applicable.
C-1 MILCON Project No. & Name. Not applicable.

(U) RELATED RDT&E:
This project transitions waterfront facilities technology from applied research and advanced development programs PE0602234N, Materials, Electronics and Computer Technology, PE0602236N, Warfighter Sustainment Applied Research, and PE0603236N, Warfighter Sustainment Advanced Technology. It also transitions facility technologies developed at universities under the sponsorship of the National Science Foundation (NSF), by the Building and Fire Research Laboratory (BRL) of the National Institute of Standards and Technology (NIST), and by the Construction Engineering Research Laboratories (CERL) and Waterways Experiment Station (WES) of the U. S. Army Engineer Research and Development Center (USAERDC) when they can contribute to the solution of one of the Navy requirements being addressed by this project. The project pursues opportunities to leverage private sector investment through partnerships with private sector organizations, such as the Civil Engineering Research Foundation (CERF), the Marketing Development Alliance (MDA) of Fiberglass Reinforced Plastics Composites Industry and the Strategic Development Council of the American Concrete Institute. The project seeks to leverage and collaborate with the navy Sustainment, Restoration and efforts including Military Construction..

E. Acquisition Strategy:

(U) This project is categorized as Non-ACAT (Non Acquisition). The know-how produced from this project enables the safe and cost effective application of emerging/advanced technology concepts and products: 1) specifying or describing the performance, 2) enabling innovative design applications, 3) enabling quality control/quality assurance during constructions, 4) enabling reliability and maintainability during operations, and 5) developing lifecycle cost projections and environmental sustainability life cycle data for Navy policy guidance and criteria serving the Navy Sustainment, Restoration and Modernization and Military Construction (MILCON) programs. The data from this program enables earliest and safe utilization of advanced technology for cost avoidance in the facilities infrastructure. The technical know-how of this program is transferred to the construction industry that delivers Navy construction and maintenance through the inclusion of individual firms (using competitive selection processes) and industry organizations/associations in the development and testing activities. MILCON, Repair and Modernization are not serial production acquisition processes but site specific construction acquisitions.

F. Major Performers:

Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA.

R-1 SHOPPING LIST - Item No. 69-7 of 69-14

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT Facilities Improvement/ PE0603725N			PROJECT NUMBER AND NAME Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Waterfront Facilities Repair & Upgrade	WX	NFESC, Pt Hueneme, CA	1.760			0.100	10/03	0.400	10/04	nominal varies	cont.	na
	WR	NUWC, New London, CT	0.687								0.687	
	WR	EFANW, Poulsbo, WA	0.012								0.012	
	FP	MCA Engrg, Costa Mesa, CA	0.045								0.045	
Sustainment, Restoration & Modernization Tech	WX	NFESC, Pt Hueneme, CA	3.583			0.200	10/03	0.350	10/04	nominal varies	cont.	na
	FP	CERF, Washington, DC	0.045								0.045	
	RC	LANTDIV, Norfolk, VA	0.051								0.051	
	FP	NAS Misawa, Misawa, Japan	0.028								0.028	
	WR	SWDIV, San Diego, CA	0.002								0.002	
	FP	Han Padron Inc., NY	0.019								0.019	
	FP	Atmos Anal. &Consult, Inc.	0.006								0.006	
	RC	N. State Univ. Aberdeen, MD	0.042								0.042	
	WR	PWD, NWS, Charleston, SC	0.081								0.081	
	FP	ADC, Inc.	0.021								0.021	
	FP	Weston Geophysical, MA	0.025								0.025	
	FP	Northwestern Univ., IL	0.024								0.024	
	FP	Blackledge Diving	0.010								0.010	
	FP	ABC Painting, CA	0.032								0.032	
	FP	Polyspec Corp, TX	0.060								0.060	
	FP	Abras. Blast & Coat, CA	0.030								0.030	
	MP	U. S. Army Huntsville, AL	0.100								0.100	
	RC	Contractors TBD	0.050			0.100	03/04	0.317	03/05	cont.	cont.	
Modular Hybrid Pier	WR	NFESC, Pt Hueneme, CA	0.275	0.350	10/02	0.344	10/03	0.400	10/04	nominal varies	cont.	na
	FP	BergerAbam. Seattle, WA	0.581	1.727	05/03	0.250	03/04	0.100	03/05		2.658	
	FP	Contractors TBD	0.000			0.446	06/04				0.446	
			7.569	2.077		1.440		1.567		0.000	12.653	

Remarks:
Total Prior Years Cost summation does not include performing activities from projects completed in prior years.

Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: Included in Product Development costs.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Facilities Improvement/ PE0603725N				PROJECT NUMBER AND NAME Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			7.569	2.077		1.440		1.567		0.000	12.653	
Remarks:												

R-1 SHOPPING LIST -Item Nol 69-9 of 69-14

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT Facililties Improvement/ PE0603725N			PROJECT NUMBER AND NAME Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: Not applicable.

R-1 SHOPPING LIST - Item No. 69-10 of 69-14

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Facilities Improvement / PE0603725N			PROJECT NUMBER AND NAME Y0995 / Facilities System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: Not applicable.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT Facilities Improvement / PE0603725N				PROJECT NUMBER AND NAME Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												

R-1 SHOPPING LIST - Item No. 69-12 of 69-14

CLASSIFICATION:

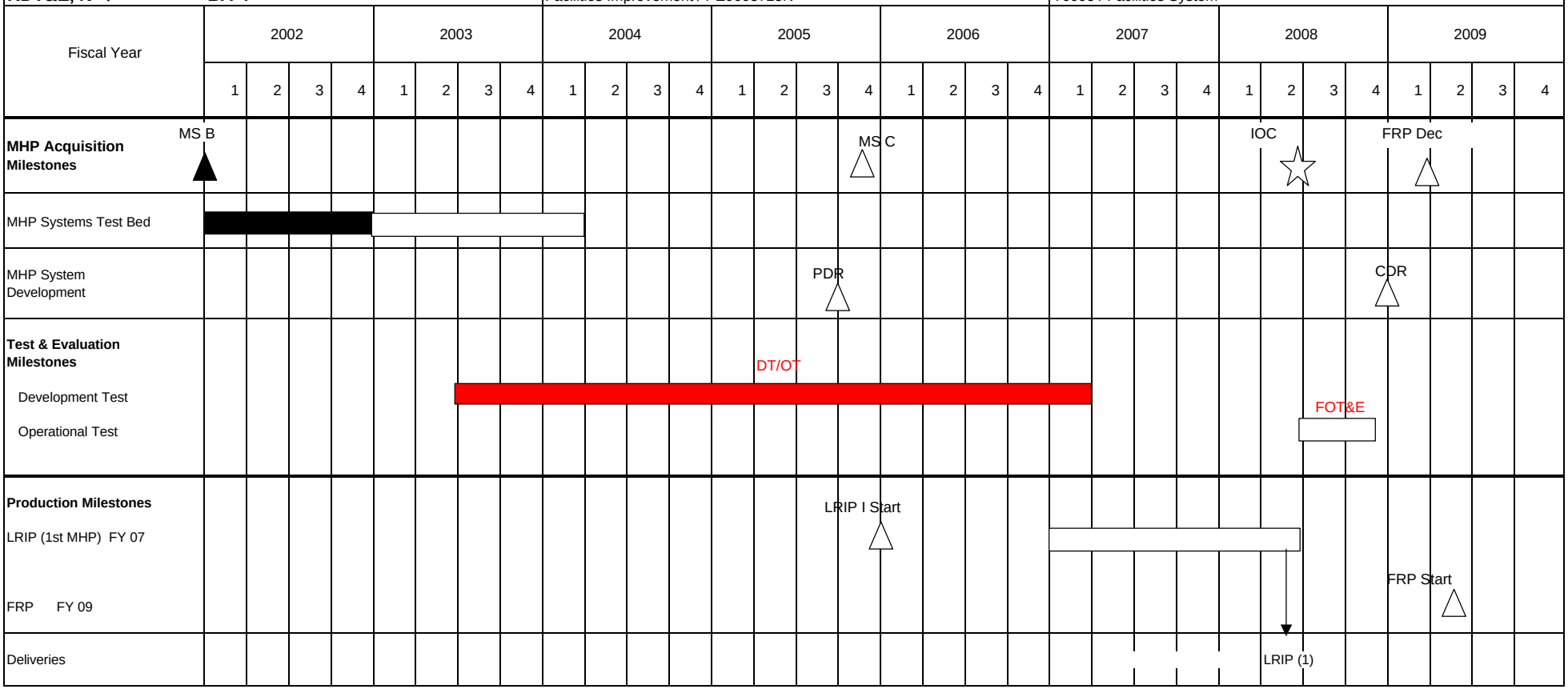
EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: Facilities Improvement / PE0603725N

PROJECT NUMBER AND NAME: Y0995 / Facilities System



R-4 Schedule Profile - Item No. 69-13 of 69-14

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT Facilities Improvement/ PE0603725N				PROJECT NUMBER AND NAME Y0995 / Facilities System			
Schedule Profile (MHP)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Milestone II (MSII)	1Q							
MHP Systems (Test Bed) Development	1Q-4Q	1Q-4Q	1Q					
Combined Developmental/Operational Testing (DT/OT)		3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q		
Preliminary Design Review (PDR)				3Q				
Milestone C (MS C)				4Q				
Start Low-Rate Initial Production I (LRIP)					1Q			
Low-Rate Initial Production Delivery							2Q	
Follow-On Operational Test & Evaluation (FOT&E)							3Q-4Q	
IOC							3Q	
Critical Design Review (CDR)							4Q	
Full Rate Production (FRP) Decision								1Q
Full Rate Production Start								2Q

R-4 Schedule Profile - Item No 69-14 of 69-14

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603739N Navy Logistic Productivity			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE0603739N Cost	**34.111**	**21.338**	**7.591**	**7.957**	**7.251**	**7.259**	**7.250**	**7.360**
T1886 Rapid Retargeting *	**4.151**	**2.738**						
T2767 Collaborative Logistics Productivity Program **	**6.548**	**6.651**						
T2769 Compatible Processor Upgrade Program ***	**2.407**	**1.956**						
T2920 Ordnance Management ****	**10.591**	**4.441**	**4.102**	**4.474**	**3.769**	**3.688**	**3.612**	**3.653**
W2955 JEDMICS	**4.058**	**3.498**	**3.489**	**3.483**	**3.482**	**3.571**	**3.638**	**3.707**
W9047 JEDMICS Enhancements	**4.712**	**2.054**						
W9048 JEDMICS Security	**1.644**							
Quantity of RDT&E Articles **Not Applicable**								

* Rapid Retargeting is a Congressional add executed under project unit T1886 in FY 2000 , FY 2001 and FY 2002.
** Collaborative Logistics Productivity Program (formally VSIP) is a Congressional add executed under project unit T2767 in FY2000, FY 2001, and FY 2002.
*** Compatible Processor Upgrade Program is a Congressional add executed under project unit T2769 in FY 2000 , FY 2001, and FY 2002.
**** FY 02 - This amount includes a BTR in the amount of $3,200K for the ATOS program at Indian Head NWC . The Actual Ordnance Management (T2920) funding is $7, 355K.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Ordnance Management - Covers the conversion of Naval Ammunition Logistics Center(NALC) systems to the Ordnance Information Systems(OIS). 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.

JEDMICS - In FY85 Congress directed the Services and Defense Logistics Agency to permanently capture, manage and control engineering data in digital format so it would be available to support competitive spares re-procurement. 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: January 2003	
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)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	4.151	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T1886 Rapid Retargeting

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.151	0.000	0.000	0.000
RDT&E Articles Quantity				

FY02 funding will be used to address component obsolescence on a number of both ongoing and new projects. For "On Going", projects the deliverables will be: (1) the software (VHDL) models which describe the functionality and characteristics of the components being retargeted; (2) prototype retargeted hardware for Navy testing…hardware will use state-of-the-art components and be a form-fit-function replacement for the legacy component; and, (3) documentation (such as draft Engineering Change Proposals) required to support the fleet fielding of the retargeted components. For new systems, the deliverables will be a preliminary technical assessment of the feasibility of employing RRT technology on the components in question, as well as the software (VHDL) models for some of those components which are determined to be suitable for use of RRT as a result of the preliminary technical assessment.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity		2.738		

FY 03 funding will be used to expand the FY 02 effort.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T1886 Rapid Retargeting

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	4.220	0.000	0.000	0.000
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	4.151	2.738	0.000	0.000
Total Adjustments	-0.069	2.738	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.069			
Economic Assumtions				
Reprogrammings				
Congressional increases		2.738		
Subtotal	-0.069	2.738	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T1886 Rapid Retargeting

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

CPFF - Titan/Visicom

F. MAJOR PERFORMERS: **

List major contractors, universities, colleges, government facilities, federally funded research and development centers, laboratories, center, or other organizations contributing to this effort through BY2 (FY 2005). Only list those who were primary recipients of funds (e.g., received 15% or over $10 million, whichever is less). Include name or titles, locations and brief description of work performed. Include actual or projected award date (month/year).

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: January 2003						
APPROPRIATION/BUDGET ACTIVITY **RDT&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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													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	TITAN/VISICOM CA		3.827	09/02	2.519	TBD						6.346	15.981
Training Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Subtotal Support				3.827		2.519		0.000				0.000	6.346	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)											DATE: January 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 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		0.324	09/02	0.219	TBD				0.543	
Travel											0.000	
Labor (Research Personnel)											0.000	
Overhead											0.000	
Subtotal Management				0.324		0.219		0.000		0.000	0.543	
Remarks:												
Total Cost			0.000	4.151		2.738		0.000		0.000	6.889	

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R4, Schedule Profile																																DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity														PROJECT NUMBER AND NAME T1886 Rapid Retargeting												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Developmental Testing				[redacted]																												
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones LRIP I FY 05 LRIPII FY 06 FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 71

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: January 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T1886 Rapid Retargeting			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)	4Q	1Q-4Q						
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R-2a, RDT&E Project Justification							DATE: January 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2767 Collaborative Logistics Productivity Virtual Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**6.548**	**6.651**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Collaborative Logistics Productivity (CLP) is a government owned, contractor maintained, web-enabled information program providing DoD users with access to an open environment of logistics, supply chain, and engineering design interface data. Beginning in FY 02, CLP expands upon the objectives of its predecessor, the Virtual System Implementation Program, by adding logistics initiatives to the pre-existing engineering network. Given its broader purpose, CLP is designed to provide the Navy engineering and logistics infrastructure with the tools to shorten weapons system acquisition lead time, reduce equipment sparing requirements and improve equipment sustainability, while decreasing total ownership costs. Geographically dispersed users --- including DLA, the NAVICP, acquisition program managers, engineering field activities, and private industry --- will use CLP integrated data and standard tools from multiple sources to work collaboratively to develop and sustain weapons systems while leveraging existing/emerging applications for improved decision making.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2767 Collaborative Logistics Productivity Virtual Systems

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	6.566			
RDT&E Articles Quantity				

CLP is a follow-on efforts to enrich the VSIP engineering & logistics system framework into a more robust collaborative environment beginning in FY02 … building a system architecture to host/secure/execute various application programs, tools and re-engineered processes. Initial applications will provide business tools for managing the Rapid Retargeting software modeling process … follow-on applications are designed to transform available technologies into improved fleet readiness and/or cost savings benefits.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		6.648		
RDT&E Articles Quantity				

FY 03 funding will be used to expand the FY 02 effort.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2767 Collaborative Logistics Productivity Virtual Systems

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	6.740			
Current BES/President's Budget:	6.548	6.651		
Total Adjustments	-0.192	6.651	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.192			
Economic Assumtions				
Reprogrammings				
Congressional increases		6.651		
Subtotal	-0.192	6.651	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2767 Collaborative Logistics Productivity Virtual Systems	

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

CPFF - Concurrent Tech Corp

F. MAJOR PERFORMERS: **

Not Applicable

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T2767 Collaborative Logistics Productivity Virtual Systems									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													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		6.041	09/02	6.117	TBD						12.158	17.773
Training Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Subtotal Support			0.000	6.041		6.117		0.000				0.000	12.158	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)													DATE: January 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T2767 Collaborative Logistics Productivity Virtual Systems								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													0.000	
Operational Test & Evaluation													0.000	
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		0.507	09/02	0.531	TBD						1.038	
Travel													0.000	
Labor (Research Personnel)													0.000	
Overhead													0.000	
Subtotal Management			0.000	0.507		0.534		0.000				0.000	1.041	
Remarks:														
Total Cost			0.000	6.548		6.651		0.000				0.000	13.199	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R4, Schedule Profile | DATE: January 2003

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2767 Collaborative Logistics Productivity Virtual Systems

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Developmental Testing				■	■	■	■	■																								
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIPII FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 71

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: January 2003		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2767 Collaborative Logistics Productivity Virtual Systems			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)	4Q	1Q-4Q						
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

EXHIBIT R-2a, RDT&E Project Justification							DATE: January 2003	
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)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**2.407**	**1.956**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2769 Compatible Processor Upgrade Program	

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.407			
RDT&E Articles Quantity				

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.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		1.956		
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2769 Compatible Processor Upgrade Program

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	2.478			
Current BES/President's Budget:	2.407	1.956		
Total Adjustments	-0.071	1.956	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.071			
Economic Assumtions				
Reprogrammings				
Congressional increases		1.955		
Subtotal	-0.071	1.955	0.000	0.000

Schedule:

Not Applicable

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 71

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2769 Compatible Processor Upgrade Program

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

E. ACQUISITION STRATEGY: *

Not Applicable

F. MAJOR PERFORMERS: **

Not Applicable

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: January 2003						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2769 Compatible Processor Upgrade Program								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development													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		2.221	9/02	1.799	TBD						4.020	
Training Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Subtotal Support			0.000	2.221		1.799		0.000		0.000		0.000	4.020	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)												DATE: January 2003		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603739N Navy Logistic Productivity			PROJECT NUMBER AND NAME T2769 Compatible Processor Upgrade Program								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													0.000	
Operational Test & Evaluation													0.000	
Tooling													0.000	
GFE													0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support	WX	NAVSUP Mechanicsburg PA		0.193	09/02	0.156	TBD						0.349	
Travel													0.000	
Labor (Research Personnel)													0.000	
Overhead													0.000	
Subtotal Management			0.000	0.186		0.157		0.000		0.000		0.000	0.343	
Remarks: *** Based on release of funds by OSD														
Total Cost			0.000	2.407		1.956		0.000		0.000		0.000	4.363	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R4, Schedule Profile																																DATE: January 2003
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											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Developmental Testing																																
Test & Evaluation Milestones Development Test Operational Test																																
Production Milestones LRIP I FY 05 LRIPII FY 06 FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 71

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: January 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2769 Compatible Processor Upgrade Program			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)	Q4	Q1-Q4						
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R-2a, RDT&E Project Justification							DATE: January 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2920 Ordnance Management			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**10.591**	**4.441**	**4.102**	**4.474**	**3.769**	**3.688**	**3.612**	**3.653**
RDT&E Articles Qty								

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2920 Ordnance Management

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	10.591			4.474
RDT&E Articles Quantity				

The NALC plans to use a combination of software developement, training developement and configuration management for the following OIS systems: 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).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		4.441		
RDT&E Articles Quantity				

NALC plans to use a combination of software development, training development and configuration management for the following OIS systems: Retail Ordnance Logistics Management System (ROLMS), Receipts, Storage, Stowage, and Issue (RSS&I), Demil Program Support, Ordnance Data Warehouse, and Conventional Ammunition Inventory Managent System (CAIMS). NAVSEA systems will be integrated into the OIS

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			4.102	
RDT&E Articles Quantity				

NALC plans to use a combination of software development, training development, and configuration management for the following OIS systems: Ammunition Investment Model (AIM) , Packaging, Handling, Storage & Transportation (PHS&T), Exercise Planning, Fleet Readiness, etc.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2920 Ordnance Management

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				4.474
RDT&E Articles Quantity				

NALC plans to use a combination of software development, training development, and configuration management for the following OIS systems: PHS&T, Joint Sentencing Toolkit, Weapons Maintenance Support, Explosive Safety, etc.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2920 Ordnance Management

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	7.370	4.546	5.331	5.451
Current BES/President's Budget:	10.555	4.441	4.102	4.474
Total Adjustments	3.185	-0.105	-1.229	-0.977
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions	-0.015	-0.101		
SBIR/STTR Transfer				
Economic Assumptions			-0.626	-0.789
Reprogrammings	3.200			
Miscellaneous Adjustments			-0.603	-0.188
Subtotal	3.185	-0.101	-1.229	-0.977

Schedule:

Not Applicable

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: January 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2920 Ordnance Management

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 705000 OIS	1.228									1.228

E. ACQUISITION STRATEGY: *

FY 2002
OCT 01 - OIS Software Development & Configuration Management Support
JAN 02 - OIS Training & OIS Documentation

FY 2003
OCT 02 - OIS Software Development & Configuration Management Support
JAN 03 - OIS Training & Documentation

FY 2004
JAN 04 - RSS&I Integration
FEB 04 - Fleet Readiness
DEC 03 - Ordnance Data Warehouse
MAY 04 - ROLMS
MAY 04 - AIM

FY 2005
OCT 05 - PHS&T and Joint Sent Toolkit
JUN 05 - Weapons Maintenance Support and
JUL 05 - Explosive Safety

F. MAJOR PERFORMERS: **

Not Applicable

*** Not required for Budget Activities 1,2,3, and 6**
**** Required for DON and OSD submit only.**

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)									DATE: January 2003					
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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development				3.200									3.200	
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	3.200		0.000		0.000		0.000		0.000	3.200	
Remarks:														
Development Support Equipment													0.000	
Software Development	TBD	TBD		5.296	02/02	3.112	10/02	2.789	10/03	3.221	10/04		14.418	
Training Development	TBD	TBD		0.441	02/02	0.267		0.287	10/03	0.224	10/04		1.219	
Integrated Logistics Support													0.000	
Configuration Management	TBD	TBD		0.368	02/02	0.222	10/02	0.246	10/03	0.179	10/04		1.015	
Technical Data													0.000	
GFE													0.000	
Subtotal Support			0.000	6.105		3.601		3.322		3.624		0.000	16.652	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: January 2003						
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 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation				0.735	02/02	0.489		0.451	10/03	0.537	10/04		2.212	
Operational Test & Evaluation				0.368	02/02	0.266		0.246	10/03	0.268	10/04		1.148	
Tooling													0.000	
GFE													0.000	
Subtotal T&E			0.000	1.103		0.755		0.697		0.805		0.000	3.360	
Remarks:														
Contractor Engineering Support													0.000	
Government Engineering Support													0.000	
Program Management Support	WX	TBD		0.147		0.089		0.083	10/03	0.045	10/04		0.364	
Travel													0.000	
Labor (Research Personnel)													0.000	
Overhead													0.000	
Subtotal Management			0.000	0.147		0.085		0.083		0.045		0.000	0.364	
Remarks:														
Total Cost			0.000	10.555		4.441		4.102		4.474		0.000	23.572	
Remarks:														

R-1 SHOPPING LIST - Item No. 71

EXHIBIT R4, Schedule Profile | DATE: January 2003

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	T2920 Ordnance Management

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Software Development, Testing & User Training		■	■	■	■	■	■	■																								
System Intergration									■	■	■	■	■	■	■	■																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIPII FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 71

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: January 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME T2920 Ordnance Management			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development	Q2-Q4	Q1-Q4						
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)			Q1-Q4	Q1-Q4				
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIV	PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RBA-4	0603739N Navy Logistic Productivity			W2955 Joint Engineering Data Management Information & Control System				
COST ($ in Mi	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**4.058**	**3.498**	**3.489**	**3.483**	**3.482**	**3.571**	**3.638**	**3.707**
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 77,000,000 engineering images and has 34,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 26 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since its brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, ECP processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logis	W2955 (JEDMICS)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.731	2.469	2.457	2.435
RDT&E Articles Quantity				

(U) Conduct development efforts associated with COTS obsolescence of the fully deployed COTS intensive JEDMICS system. Conduct COTS requirements definition, evaluation, integration and testing of annual baseline releases. Conduct technology insertion of the JEDMICS system that is required to protect the $21B digital data asset managed in JEDMICS.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.290	0.272	0.274	0.276
RDT&E Articles Quantity				

(U) Conduct technical evaluations and configuration control reviews of JEDMICS system.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.037	0.757	0.858	0.772
RDT&E Articles Quantity				

(U) Conduct test and readiness reviews and functional performance tests on JEDMICS system.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	W2955 Joint Engineering Data Management Information & Control System (JEDMICS)

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	4.261	3.498	3.489	3.483
Current BES/President's Budget	4.058	3.498	3.489	3.483
Total Adjustments	-0.203	0.000	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.100			
Economic Assumptions				
Reprogrammings	-0.083			
SPONSOR/FMB/NAVAIR Adjustments				
Congressional increases				
Subtotal	-0.183	0.000	0.000	0.000

Schedule:

Not Applicable.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W2955 (JEDMICS)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 331100, JEDMICS	11.398									11.398

E. ACQUISITION STRATEGY: *

(U) 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.

F. MAJOR PERFORMERS:

Major Perfo	Location	Description of Work	FY03 Amount	FY03 Award Date	FY04 Amount	FY04 Award Date	FY05 Amount	FY05 Award Date
Northrup G Informatiom Technology	McLean, VA	Development and test of baseline releases re due to COTS obselescemce, technology advances, and data format and infrastrure changes.	2.469	12/02	2.457	12/03	2.435	12/04

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, BA-4**		PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME W2955 (JEDMICS)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Product Development												
Remarks:												
Software Development	C/FFP	Northrup Gruman Inform	2.764	2.469	12/02	2.457	12/03	2.435	12/04	10.098	20.223	20.223
		tion Technology, Mclean, VA										
Software Development	C/ID/IQ		0.050								0.050	0.050
Subtotal Support			2.814	2.469		2.457		2.435		10.098	20.273	
Remarks: Funds are for development efforts associated with COTS obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Infomation & Control System (JEDMICS). Funds are for COTS evaulation, integration, and test and evaluation. The common baseline will be regained and obsolete COTS software and hardware will be replaced. Baseline releases will protect joint interoperability, upgrade operating systems for security patches and supportable versions, support integration to replace obsolete COTS, and upgrade the Oracle database to supportable versions.												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, 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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF		0.369	0.375	12/02	0.382	12/03	0.389	12/04	1.631	3.146	3.146
Developmental Test & Evaluation	C/FFP		0.004								0.004	0.004
Developmental Test & Evaluation	MIPR		0.628	0.425	10/02	0.425	10/03	0.425	10/04	1.700	3.603	
Developmental Test & Evaluation	WR		0.017	0.017	10/02	0.016	10/03	0.017	10/04	0.068	0.135	
Operational Test & Evaluation	WR		0.020								0.020	
Award Fees (Performance 93%,	C/CPAF		0.016	0.016	12/02	0.016	12/03	0.016	12/04	0.068	0.132	
82.5% of Fees Awarded)												
Subtotal T&E			1.054	0.833		0.839		0.847		3.467	7.040	
Remarks: Supports testing and evaluation of baseline releases in a user environment.												
Government Engineering Support	MIPR		0.160	0.140	10/02	0.140	10/03	0.140	10/04	0.560	1.140	
Program Management Support	WR		0.130	0.132	10/02	0.133	10/03	0.135	10/04	0.571	1.101	
Travel	WR		0.003	0.003	10/02	0.003	10/03	0.003	10/04	0.012	0.024	
Subtotal Management			0.293	0.275		0.276		0.278		1.143	2.265	
Remarks: Supports requirements management at the Prime Contractor location.												
Total Cost			4.161	3.577		3.572		3.560		14.708	29.578	
Remarks:												

CLASSIFICATION:

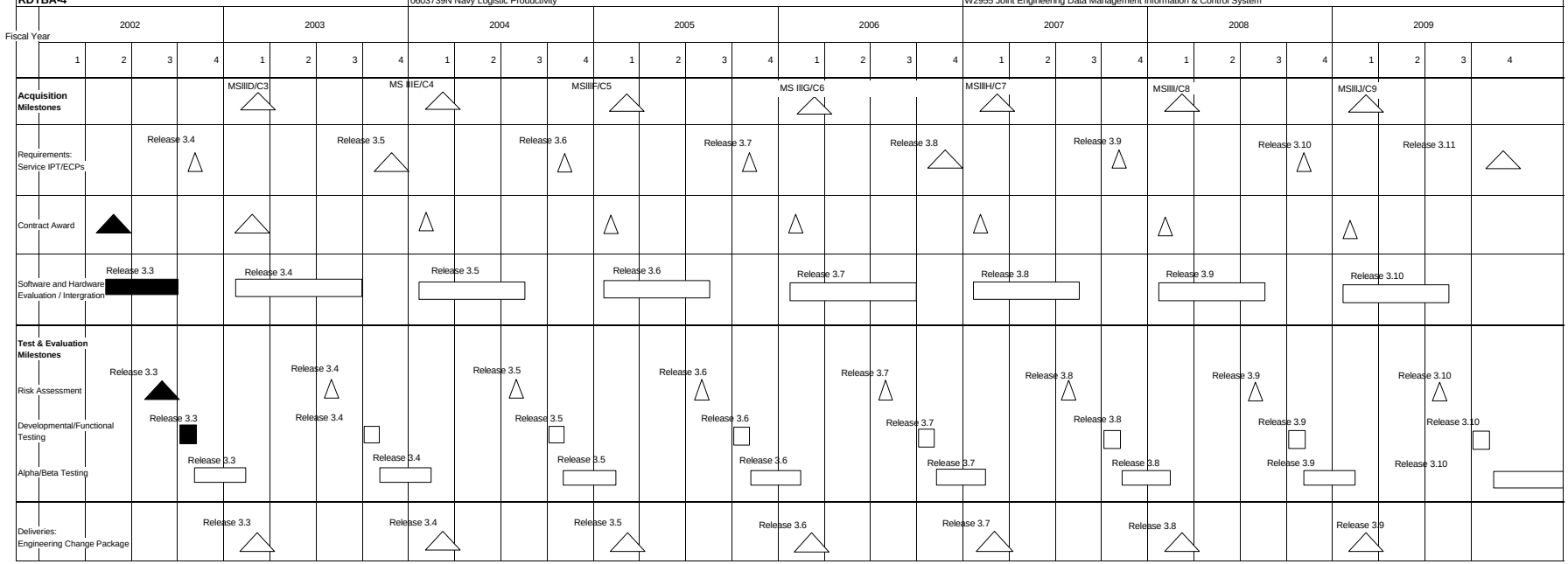
EXHIBIT R4, Schedule Profile

DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY
RDTBA-4

PROGRAM ELEMENT NUMBER AND NAME
0603739N Navy Logistic Productivity

PROJECT NUMBER AND NAME
W2955 Joint Engineering Data Management Information & Control System



CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: February 2003		
R								
APPROPRIATION/BUDGET ACTIVITY **RD˙ BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME W2955 JEDMICS			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Contract Award	2Q							
Software Hardware Evaluation/Integration Release 3.3	2Q-3Q							
Risk Assessment Release 3.3	3Q							
Developmental/Functional Testing Release 3.3	3Q-4Q							
Service IPT/ECPs Release 3.4	4Q							
Alpha/Beta Testing Release 3.3	4Q	1Q						
Engineering Change Package Release 3.3		1Q						
Milestone IIID or C3 (MSIIID/C3) Release 3.3		1Q						
Contract Award		1Q						
Software Hardware Evaluation/Integration Release 3.4		1Q-3Q						
Risk Assessment Release 3.4		3Q						
Developmental/Functional Testing Release 3.4		4Q						
Service IPT/ECPs Release 3.5		4Q						
Alpha/Beta Testing Release 3.4		4Q	1Q					
Engineering Change Package Release 3.4			1Q					
Milestone IIIE or C4 (MSIIIE/C4) release 3.4			1Q					
Contract Award			1Q					
Software Hardware Evaluation/Integration Release 3.5			1Q-3Q					
Risk Assessment Release 3.5			3Q					
Developmental/Functional Testing Release 3.5			4Q					
Service IPT/ECPs Release 3.6			4Q					
Alpha/Beta Testing Release 3.5			4Q	1Q				
Engineering Change Package Release 3.5				1Q				
Milestone IIIF or C5 (MSIIIF/C5) Release 3.5				1Q				
Contract Award				1Q				
Software Hardware Evaluation/Integration Release 3.6				1Q-3Q				
Risk Assessment Release 3.6				3Q				
Developmental/Functional Testing Release 3.6				4Q				
Service IPT/ECPs Release 3.7				4Q				
Alpha/Beta Testing Release 3.6				4Q				
Engineering Change Package Release 3.6								
Milestone IIIG or C6 (MSIIIG/C6) Release 3.6								
Contract Award								
Software Hardware Evaluation/Integration Release 3.7								
Risk Assessment Release 3.7								

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E BA-4**	PROGRAM ELEMENT 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME W2955 JEDMICS			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Developmental/Functional Testing Release 3.7								
Service IPT/ECPs Release 3.8								
Alpha/Beta Testing Release 3.7								
Engineering Change Package Release 3.7								
Milestone IIIH or C7 (MSIIIH/C7) release 3.7								
Contract Award								
Software Hardware Evaluation/Integration Release 3.8								
Risk Assessment Release 3.8								
Developmental/Functional Testing Release 3.8								
Service IPT/ECPs Release 3.9								
Alpha/Beta Testing Release 3.8								
Engineering Change Package Release 3.8								
Milestone IIII or C8 (MSIIII/C8) Release 3.8								
Contract Award								
Software Hardware Evaluation/Integration Release 3.9								
Risk Assessment Release 3.9								
Developmental/Functional Testing Release 3.9								
Service IPT/ECPs Release 3.10								
Alpha/Beta Testing Release 3.9								
Engineering Change Package Release 3.9								
Milestone IIIJ or C9 (MSIIIJ/C9) release 3.9								
Contract Award								
Software Hardware Evaluation/Integration Release 3.10								
Risk Assessment Release 3.10								
Developmental/Functional Testing Release 3.10								
Service IPT/ECPs Release 3.11								
Alpha/Beta Testing Release 3.10								

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME W9047 JEDMICS Enhancements			
COST ($ in Million	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**4.712**	**2.054**						
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 77,000,000 engineering images and has 34,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 26 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since its brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, ECP processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	W9047 JEDMICS Enhancements

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.712	2.054		
RDT&E Articles Quantity				

(U) Complied with Congressional direction for JEDMICS WEB Interface and Technical Data Management Enhancements.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AN	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logistic Productivity	W9047 Joint Engineering Data Management Information & Control System Enhancements

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	4.857			
Current BES/President's Budget	4.712	2.054		
Total Adjustments	-0.145	2.054	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.122			
Economic Assumtions				
Reprogrammings	-0.023			
SPONSOR/FMB/NAVAIR Adjustments				
Congressional increases		2.054		
Subtotal	-0.145	2.054	0.000	0.000

Schedule:

Delay in receipt of funding has caused the contract award dates and program schedules to slip five months.

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603739N Navy Logistic Productivity				PROJECT NUMBER AND NAME W9048 JEDMICS Security			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**1.644**							
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 77,000,000 engineering images and has 34,000 authorized users responsible for over 70,000 user sessions per month. Over 2.5 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 26 interoperable sites that service 600 locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since its brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, ECP processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603739N Navy Logis	W9048 JEDMICS Security

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.644			
RDT&E Articles Quantity				

(U) Complied with Congressional direction for JEDMICS WEB Interface and Technical Data Management Enhancements.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AN 0603739N Navy Logistic Productivity	PROJECT NUMBER AND NAME W9048 JEDMICS Security

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.700			
Current BES/President's Budget	1.644			
Total Adjustments	-0.056	0.000	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.056			
Economic Assumptions				
Reprogrammings				
SPONSOR/FMB/NAVAIR Adjustments				
Congressional increases				
Subtotal	-0.056	0.000	0.000	0.000

Schedule:

Delay in receipt of funding has caused the contract award dates and program schedules to slip five months.

Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603755N/SHIP SELF DEFENSE			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**9.054**	**5.800**	**9.733**	**10.605**	**10.532**	**12.226**	**12.390**	**12.649**
K2133/22133/QRCC/RAWG	**2.096**	**2.009**	**4.315**	**4.693**	**4.482**	**4.862**	**4.891**	**5.025**
K2184/(K9050*) Force AAW Coord. Tech. (FACT)	**6.958**	**3.791**	**5.418**	**5.912**	**6.050**	**7.364**	**7.499**	**7.624**

A. 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 AAW concepts and capabilities that will enhance the AAW warfighting ability of ships and aircraft and enable the coupling of the Force into a single, distributed AAW weapon system through more effective use of tactical data, and force sensors and weapons.

*K9050: Includes $.961 Congressional Add for Transportable Anti-Intrusion Pontoon Barrier Systems.

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME K2133/22133/Quick Reaction Combat Capability/Req and Analysis W/G			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	* **2.096**	**2.009**	**4.315**	**4.693**	**4.482**	**4.862**	**4.891**	**5.025**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Quick Reaction Combat Capability (QRCC) provides advanced concepts and technology developments for the multi-sensor integration of ship detection equipment, integration and coordination of ship self defense weapons, and coordination of hardkill and softkill assets to improve individual ship self defense capabilities against the Anti-Ship Cruise Missile (ASCM) threat. The funding for the Self Defense Test Ship is for the dry-docking and overhaul of the Self Defense Test Ship to extend the service life for another 4 years. The Requirements and Analysis Working Group (RAWG) provides independent analysis for a variety of combat system trade-offs, ship class performance studies, and force protection strategic plan development.

* In PEO EXW the program was transferred in FY 03 to PEO IWS.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2133/ 22133/Quick Reaction Combat Capability/Requirements and Analysis Working Grp

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.096	0.000	0.000	0.000
RDT&E Articles Quantity				

Provided independent analyis for a variety of combat systems trade-off, ship class performance studies and force protection strategic plan development.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.009	0.000	0.000
RDT&E Articles Quantity				

The Requirement Analysis Working Group (RAWG) will provide POM/PR process analysis, ship class and component systems capabilities for Ship Self Defense (SSD). These analysis are supported by N76 and various PEO's involved in Ship Self Defense (SSD). The RAWG will provide analysis for a variety of combat systems trade-off and force protection strategic development.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	4.315	4.693
RDT&E Articles Quantity				

The Requirements and Analysis Working Group (RAWG) will assume leadership and management of the Common Anti Ship Cruise Missile (ASCM) Threat Characterization process for PEO IWS. The RAWG will provide support to the POM 06 Analysis for N76 staff and analyze threat D and its impact on the various ship combat systems. The RAWG will continue to respond to the PEO and OPNAV sponsors emergent tasking and participate and attend Probability of Raid Annihilation (PRA) working group meetings.

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2133/22133/Quick Reaction Combat Capability/Requirements and Analysis Working Group

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	2.161	2.054	2.369	2.473
Current BES/President's Budget: (FY04/05 Pres Controls)	2.096	2.009	4.315	4.693
Total Adjustments	-0.065	-0.045	1.946	2.220
Summary of Adjustments				
Congressional Reductions	-0.011	-0.023		
Minor Pricing Adjustments	-0.054	-0.022	-0.254	-0.280
Programmatic Adjustments			2.200	2.500
Subtotal	-0.065	-0.045	1.946	2.220

Schedule:

N/A

Technical:

N/A

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2133/22133/Quick Reaction Combat Capability/Requirements and Analysis Working Group

D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

E. ACQUISITION STRATEGY: **Not Applicable**

F. MAJOR PERFORMERS:

Dahlgren/ NSWCDD - Responsible for overall combat systems performance analysis for Navy ship classes.
02/2002

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME K2133/22133/Quick Reaction Combat Capability/Requirements and Analysis Working Group						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	Dahlgren, NSWC DD	4.955	2.009		4.315		4.693		Continuing	Continuing	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			4.955	2.009		4.315		4.693		Continuing	Continuing	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME K2133/22133/Quick Reaction Combat Capability/Requirements and Analysis Working Group							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	Dahlgren NSWC DD	9.725								9.725	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			9.725	0.000		0.000		0.000		0.000	9.725	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			14.680	2.009		4.315		4.693		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R4, Schedule Profile: **NOT APPLICABLE** | DATE: **February 2003**

N/A

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2133/22133/QRCC/RAWG

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Test & Evaluation Milestones																																
Production Milestones																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

Exhibit R-4a, Schedule Detail **NOT APPLICABLE**						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME K2133/22133/Quick Reaction Combat Cap/Req & Analysis Working Grp				
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME K2184/K9050 Force AAW Coordination Technology			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**6.958**	**3.791**	**5.418**	**5.912**	**6.050**	**7.364**	**7.499**	**7.624**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Force Anti-Air Warfare Technology (FACT) Program is an advanced development effort designed to demonstrate Force Anti-Air Warfare (AAW) concepts and capabilities that will significantly improve our Force defense in depth, including both local area and self defense capabilities against current and future AAW threats. FACT improvements are designed to enhance the AAW warfighting ability of ships and aircraft and to enable coupling of the Force into a single, 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2184/K9050 Force AAW Coordination Technology

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	5.056	2.881	4.822	2.143
RDT&E Articles Quantity				

On goinging development of Joint Targeting Attack & Assessment Capability (JTAAC)/demonstrations at sea and ashore, and support Navy's transition of JTAAC to a production program.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.791	0.760	0.454	0.335
RDT&E Articles Quantity				

Support land based and at sea experiments of Advanced Command and Control Systems, conduct analysis to evaluate air defense concepts and capabilities including Multi-TADIL operations and aire defense operations.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.150	0.150	0.142	0.142
RDT&E Articles Quantity				

Provide top level programmatic support, technical analysis and assist in the development processes, procedures and documentation that impact the execution of the FACT program requirements.

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2184/K9050 Force AAW Coordination Technology

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				3.292
RDT&E Articles Quantity				

Develop the genesis for major improved functionality in Navy and Joint Defense.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.961			
RDT&E Articles Quantity				

Transportable Anti-Intrusion Pontoon Barrier System.

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2184/K9050 Force AAW Coordination Technology

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	7.109	3.876	3.051	3.211
Current BES/President's Budget: (FY04/05 Pres Controls)	6.958	3.791	5.418	5.912
Total Adjustments	-0.151	-0.085	2.367	2.701
Summary of Adjustments				
Programmatic Adjusments			2.594	2.957
Miscellaneous pricing adjustments	-0.053	-0.041	-0.227	-0.256
Congressional Reductions	-0.098	-0.044		
Subtotal	-0.151	-0.085	2.367	2.701

Schedule:

Not Applicable.

Technical:

Not Applicable.

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603755N/SHIP SELF DEFENSE	K2184/K9050 Force AAW Coordination Technology

D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS: APL/Laurel, MD 11/02

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME K2184/K9050 Force AAW Coordination Technology						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	APL/Laurel, MD	74.407	2.881	11/02	4.822	11/03	5.435	11/04	CONT	CONT	
Systems Engineering		SPAWAR, S.D.	0.150								0.150	
Systems Engineering		SPAWAR NORFOLK	0.417								0.417	
Systems Engineering		PUGET SOUND BOSTON	0.029								0.029	
Systems Engineering	GSA	GRCI	0.204								0.204	
Miscellaneous		Unknown	0.187								0.187	
Pontoon Barrier		Unknown	0.961								0.961	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			76.355	2.881		4.822		5.435		CONT	CONT	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support		NSWC/PHD	0.175								0.175	
Integrated Logistics Support		NSLC Mech, PA	0.005								0.005	
Integrated Logistics Support	GSA	AMERIND	0.111								0.111	
Technical Data		NSWC/DD/ Dahlgren, VA	0.150								0.150	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.441	0.000		0.000		0.000		0.000	0.441	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE			PROJECT NUMBER AND NAME K2184/K9050 Force AAW Coordination Technology						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation	CPFF	APL/Laurel, MD	1.415	0.760	11/02	0.454	11/02	0.335	11/02	CONT	CONT	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			1.415	0.760		0.454		0.335		CONT	CONT	
Remarks:												
Contractor Engineering Support	CPAF	RGE, SPRINGFIELD, VA	0.006								0.006	
Contractor Engineering Support	CPFF	SPA,FAIRFAX, VA	0.100								0.100	
Contractor Engineering Support	CPFF	LOGICON, FALLS CHUR, VA	0.060									
Contractor Engineering Support	GSA	STRATEGIC INSIGHT, VA	0.189									
Program Management Support	GSA	DSR, FAIRFAX, VA	0.440	0.150	11/02	0.142	11/03	0.142	11/04	CONT	CONT	
Travel											0.000	
Labor (Research Personnel)											0.000	
Subtotal Management			0.795	0.150		0.142		0.142		CONT	CONT	
Remarks:												
Total Cost			79.006	3.791		5.418		5.912		CONT	CONT	
Remarks:												

R-1 SHOPPING LIST - Item No. 75

CLASSIFICATION:

EXHIBIT R4, Schedule Profile:																																DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603755N/SHIP SELF DEFENSE														PROJECT NUMBER AND NAME K2184/K9050 Force AAW Coordination Technology											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CHART NOT APPLICABLE																																

R-1 SHOPPING LIST - Item No. 75

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail: **NOT APPLICABLE**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603755N/SHIP SELF DEFENSE				PROJECT NUMBER AND NAME K2184/K9050 Force AAW Coordination Technology			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CHART NOT APPLICABLE								

R-1 SHOPPING LIST - Item No. 75

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603790N
PROGRAM ELEMENT TITLE: NATO Research and Development

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R2293 NATO Cooperative Research and Development (R&D)	12,293	11,326	11,469	11,955	12,192	12,423	12,646	12,878

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In accordance with Title 10 U.S. Code Section 2350a, this PE 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.

B. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget Submission:	11,449	11,581	11,804	12,276
Adjustments from FY 2003 President's Budget:				
FY 2002 SBIR	-213			
Cong. Rescissions/Adjustments/Undist. Reductions	-58	-132		
NWCF Rate Adjustments			-6	5
Execution Adjustments	1,115			
Efficiencies at NWCF Activities			-64	-68
Pay Raise/Inflation Adjustments		-123	-265	-258
FY 2004/2005 President's Budget Submission:	12,293	11,326	11,469	11,955

PROGRAM CHANGE SUMMARY EXPLANATION:

Schedule: Not applicable
Technical: Not applicable

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603790N Project Number: R2293
PROGRAM ELEMENT TITLE: NATO Research and Development Project Title: NATO Cooperative R&D

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R2293 NATO Cooperative R&D	12,293	11,326	11,469	11,955	12,192	12,423	12,646	12,878

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In accordance with Title 10 U.S. Code Section 2350a, this project provides funding for research and development projects with approved allies under international agreements. These funds can only be applied to work efforts in the U.S., and the 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.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
Cooperative Projects	12,293	11,326	11,469	11,955

FY 2002 ACCOMPLISHMENTS:

- Supported on-going efforts on the Anti-Torpedo cooperative project between the U.S. and the United Kingdom.
- Supported Fiber Laser Sensor cooperative project between the U.S. and the United Kingdom.
- Supported the Multilateral Memorandum of Understanding (MOU) for Interoperable Networks for Secure Communication.
- Supported on-going efforts on the Multilateral MOU for LW-155 Howitzer.
- Supported the Modeling and Simulation cooperative project between the U.S and the United Kingdom.
- Supported the Naval Combat Systems Interoperability Technology cooperative project between the U.S. and the United Kingdom.
- Supported the Occupational Picture Interoperability for Coalition Warfare cooperative project between the U.S. and France.
- Supported the Dynamic Failure Prediction of Joints in Composite Sandwich Structures cooperative project between the U.S. and the Netherlands.

- Supported the Six (6) Degrees of Freedom Ship Roll cooperative project between the U.S. and Italy.
- Supported the Software Radio cooperative project between the U.S. and Japan.
- Supported the Multilateral MOU for Standard Missile Family.
- Supported the Surface Ship Torpedo Defense cooperative project between the U.S. and the United Kingdom.
- Supported the Vulnerability of Torpedo to Underwater Explosions cooperative project between the U.S. and Germany.
- Supported the Unmanned Undersea Vehicle for Mine Countermeasures cooperative project between the U.S. and the United Kingdom.
- Supported the Fiber Optic Bottom Mounted Acoustic Array cooperative project between the U.S. and the United Kingdom.

FY 2003 PLANS:

- Continue to provide support for the identification and development of MOUs with one or more approved major allies for the purpose of conducting cooperative research and development projects on defense equipment and munitions. These international agreements (MOUs) are approved by USD,A&T and are summarized in separate SSOIs.

FY 2004 PLANS:

- Continue to provide support for the identification and development of MOUs with one or more approved major allies for the purpose of conducting cooperative research and development projects on defense equipment and munitions. These international agreements (MOUs) are approved by USD,A&T and are summarized in separate SSOIs.

FY 2005 PLANS:

- Continue to provide support for the identification and development of MOUs with one or more approved major allies for the purpose of conducting cooperative research and development projects on defense equipment and munitions. These international agreements (MOUs) are approved by USD,A&T and are summarized in separate SSOIs.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603790N Project Number: R2293
PROGRAM ELEMENT TITLE: NATO Research and Development Project Title: NATO Cooperative R&D

C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:
PE 0605853N (Management, Technical and International Support)

NON-NAVY RELATED RDT&E:
PE 0605130D (Foreign Comparative Testing)

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0603790N Project Number: R2293
PROGRAM ELEMENT TITLE: NATO Research and Development Project Title: NATO Cooperative R&D

A. PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 2002	FY 2003	FY 2004	FY 2005
a. Cooperative Research and Development	12,293	11,326	11,469	11,955

B. BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION:

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2002 Budget	FY 2003 Budget	FY 2004 Budget	FY 2005 Budget	To Complete	Total Program
Product Development										
NAVSEA	PD				1,370	2,500	2,000		CONT.	CONT.
NSWC-CD	WX				1,005	900	500		CONT.	CONT.
NUWC	WX				571	450	500		CONT.	CONT.
Miscellaneous					6,582	5,976	6,769	11,955	CONT.	CONT.
NAVAIR	WX				1,115					

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

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 Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2002 Budget	FY 2003 Budget	FY 2004 Budget	FY 2005 Budget	To Complete	Total Program
Support and Management										
NRL	WX				280					
SPAWAR	PD				1,370	1,500	1,700			

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 2002 Budget	FY 2003 Budget	FY 2004 Budget	FY 2005 Budget	To Complete	Total Program
Test and Evaluation										

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 2002 Budget	FY 2003 Budget	FY 2004 Budget	FY 2005 Budget	To Complete	Total Program
Subtotal Product Development	10,643	9,826	9,769	11,955	CONT.	CONT.
Subtotal Support and Management	1,650	1,500	1,700		CONT.	CONT.
Subtotal Test and Evaluation	0	0	0		0	0
Total Project	12,293	11,326	11,469	11,955	CONT.	CONT.

EXHIBIT R4, Schedule Profile																																
Not Applicable																															DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY									PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
1319/BA 4									0603790N - NATO Research and Development												R2293 - NATO Cooperative R&D											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																
C																																

R-1 Line Item No. 78

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

Exhibit R-4a, Schedule Detail **Not applicable**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0603790N				PROJECT NUMBER AND NAME R2293 - NATO Cooperative R&D			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 78

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4**					R-1 ITEM NOMENCLATURE **0603795N/Land Attack Technology**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**140.054**	**124.142**	**63.434**	**57.141**	**18.915**	**17.887**	**11.135**	**10.408**
32156/Naval Surface Fire Support (NSFS)	**45.702**	**47.960**	**42.630**	**42.186**	**6.805**	**7.504**	**7.615**	**7.742**
39051/Advance Medium Caliber Gun Demonstrator (AMCGD)* **	**2.498**	**3.325**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
39052/Autonomous Naval Support Round (ANSR)* **	**9.848**	**4.156**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
32325/Naval Fires Control System (NFCS)	**37.129**	**24.327**	**6.071**	**6.243**	**3.491**	**2.546**	**1.632**	**1.906**
K2409/Land Attack Standard Missile (LASM)	**9.009**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
32927/32871/Naval Fires Network (NFN)* **	**33.797**	**32.298**	**14.733**	**8.712**	**8.619**	**7.837**	**1.888**	**0.760**
39053/Integrated Deepwater System (IDS)*	**2.071**	**11.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
39209/Semi-Automated Imagery Intelligence Processor (SAIP)**	**0.000**	**1.076**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Emergency Response Fund***	**73.460*** **							
Quantity of RDT&E Articles & Cost (see attached projects)								

* Funding includes the following FY02 Adds: NFN Project 32871 - $29.096M; AMCGD Project 39051 - $2.498; ANSR Project 39052 - $9.848M; IDS Project 39053 - $2.071M

**Includes the following FY03 Adds: NFN Project 32871 - $7.334M, ANSR Project 39052 - $4.156M, AMCGD Project 39051 - $3.325, SAIP Project 39209 - $1.076M, IDS Project 39053 - $11.000M (Earmark)

***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 Maneuver 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 payload to a range in excess of current capability; demonstration of a Low Cost Guidance and Electronic Unit (LCGEU); and associated propelling charge improvements. The funding profile also supports the development of an Extended Range Munition (ERM) for use in existing 5"/54 MK45 Mod 2 guns. 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. The Semi-Automated Imagery Intelligence (IMINT) Processor (SAIP)**(Project 39209)** will provide an integrated suite of tools designed to provide the tactical field commander with more comprehensive and timely battlefield awareness, derived from high-volume imagery intelligence (IMINT). 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. 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:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32156/39051/39052/Naval Surface Fire Support			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**58.048**	**55.441**	**42.630**	**42.186**	**6.805**	**7.504**	**7.615**	**7.742**
RDT&E Articles Qty				**80**				

*Funding includes FY 2002 Congressional Adds for NSFS: ANSR Project 39052 - $9.848M; AMCGD Project 39051 - $2.498M
**Funding includes FY 2003 Congressional Adds for NSFS: ANSR Project 39052 - $4.156M; AMCGD Project 39051 - $3.325M
***Funding includes NSFS FY 2004 - FY 2005 Extended Range Munition (ERM) Add - $35M

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

These funds provide for the development of a 5" MK 45 gun modification which strengthens the gun to accommodate higher firing loads (18 megajoules) to fire the Extended Range Guided Munition (ERGM); ERGM, a 5" munition with a coupled Global Positioning System/Inertial Navigation System capable of delivering a unitary warhead to ranges in excess of 41NM; a demonstration of a Low Cost Guidance and Electronic Unit (LCGEU); gun fire control system which updates the MK 160 MOD 6 to a MOD 8 providing direct digital interface with the gun; and an upgraded propelling charge to provide the higher gun firing energy required to launch 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, the transition of ATDs and Pre-Planned Product Improvements (P3Is), and installation of ERGM compatibility upgrades into the NSFS envelope. The funds also provide for the development of the Extended Range Munition (ERM) for use in existing 5"/54 MK45 Mod 2 guns. ERM with LCGEU from demonstration of Ballistic Telemetry Range Munition (ANSR) to meet acquisition to support new start in FY04.

R-1 SHOPPING LIST - Item No.79

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32156/39051/39052/Naval Surface Fire Support

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	32.078	38.297	28.554	6.107
RDT&E Articles Quantity				

Continue development of ERGM. Complete unitary warhead development, rocket motor testing and component integration. Perform ERGM land based flight tests to support FY06 IOC. Perform CDR and develop associated Technical Data Package (FY03). Conduct DT evaluation (FY05).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	9.000
RDT&E Articles Quantity				80

Procure 80 pre-production representative rounds to support OPEVAL.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.000	0.000	0.000	0.000
RDT&E Articles Quantity				

Continue development, analysis, and testing of the LCGEU in the ERGM airframe. Conduct three guided flight tests.

R-1 SHOPPING LIST - Item No. 79

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32156/39051/39052/Naval Surface Fire Support

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	9.848	4.156	0.000	0.000
RDT&E Articles Quantity				

Begin demonstration of a LCGEU in the ANSR airframe. Conduct 3 guided flight tests.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	10.000	25.000
RDT&E Articles Quantity				

Prepare Acquisition documentation and begin development of the Extended Range Munition (ERM). ERM will provide a guided projectile capability for surface combatants with 5"/54 MK45 Mod 2 gun mounts. Develop acquisition documentation, detailed program plans, and award contract for development. Obtain MS A decision approval.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.815	0.856	0.909	0.333
RDT&E Articles Quantity				

Complete development of the EX-167 Propelling Charge. Complete Technical Data Package, qualification efforts, and initiate technical activities supporting production efforts.

R-1 SHOPPING LIST - Item No. 79

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32156/39051/39052/Naval Surface Fire Support

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	7.485	7.987	3.000	1.300
RDT&E Articles Quantity				

Continue development and testing of 5" MK 45 modification and GFM preparation. Continue test firing of the modification (including Techeval, Opeval, and Barrel Wear). Continue test firing of the modification (OPEVAL).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.324	0.820	0.167	0.446
RDT&E Articles Quantity				

Complete development and testing of the Gun Fire Control Modification and required interfaces.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.498	3.325	0.000	0.000
RDT&E Articles Quantity				

Begin demonstration of an advanced modular, scalable, compact, long-range gun design.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32156/39051/39052/Naval Surface Fire Support

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	54.989	44.766	21.917	8.120
Current BES/President's Budget (FY 04 President Controls)	58.048	55.441	42.630	42.186
Total Adjustments	3.059	10.675	20.713	34.066
Summary of Adjustments				
Advanced Medium Gun Demonstrator	0.000	3.400	0.000	0.000
Autonomous Naval Support Round	0.000	4.250	0.000	0.000
FY02 BTR (July-02)	3.168	0.000	0.000	0.000
ERGM Development Shortfalls	0.000	0.000	14.600	10.200
ERGM Interface Shortfalls	0.000	0.000	4.000	6.000
ERM Development	0.000	0.000	10.000	25.000
Other Adjustments	-0.109	3.025	-7.887	-7.134
Subtotal	3.059	10.675	20.713	34.066

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. The ERGM program was restructured in FY03 to reflect a requirements change to a unitary warhead. This also led to schedule adjustments supporting an FY06 IOC. A major contract modification was also signed supporting the program revision. The contractor recently completed its third flight demonstration of ERGM on schedule which bodes well for meeting the revised contract schedule. Detailed design of the LCGEU is complete and will be demonstrated on the ERGM, and ANSR airframes in FY03. The ERM program will begin in FY04 with a planned IOC in FY08.

Technical:

N/A

R-1 SHOPPING LIST - Item No. 79

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 32156/39051/39052/Naval Surface Fire Support

D. OTHER PROGRAM FUNDING SUMMARY:

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	Complete	Cost
PAN,MC BL, 025300	5.105	4.022	4.006	22.980	21.651	22.589	41.513	64.477		
WPN BLI:4217, E5004	21.000	1.800	4.000	6.000	6.000	8.000	8.000	12.000		
SCN BLI 212200	24.868	25.507	25.507	12.753	TBD	TBD	TBD	TBD		

E. ACQUISITION STRATEGY:

The ERGM development contract was awarded to Texas Instruments (now Raytheon Missile Systems) as a result of a competitive acquisition process. TI provided a corporate investment of $55M that was applied to development. When full rate production commences in FY07, a competitive procurement will be awarded under a fixed price contract. The gun is being developed under a sole source arrangement with United Defense, the sole source manufacturer of the 5"/54 MK 45 MOD 2. The Fire Control (MK 160) is being developed by the Naval Surface Warfare Center, Dahlgren and the propelling charge is being developed by the Naval Surface Warfare Center, Indian Head since these system changes are modifications to current government owned/supplied equipment. The Technology demonstrations for both ANSR and the LCGEU are being executed under a BAA contract award to Draper Laboratory. The AMCGD demonstration will be awarded to AOT. The ERM acquisition strategy and subsequent development contract approach is TBD. The ERGM compatibility upgrade for the 5"62 gun will be awarded to UDLP.

F. MAJOR PERFORMERS:

Prime Contractor for ERGM development: Raytheon Missile Systems located in Tucson Arizona. Contract awarded to Texas Instruments (TI) in September 1996. Raytheon subsequently purchased TI and moved operations to Tucson location.

Prime Contractor for LCGEU and ANSR development: Draper Laboratory located in Cambridge MA. LCGEU contract awarded to Draper in November 2000 to develop the LCGEU to be demonstrated in the ERGM airframe. Additionally, Draper Laboratory was awarded a contract in December 2002 to demonstrate the LCGEU in the ANSR.

Primary Navy Warfare Center: Naval Surface Warfare Center located in Dahlgren, VA. Serve as the Technical Direction Agent, program management for the Integrated Product Team Leaders, and responsible for all Land Based Flight testing and evaluation.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME 32156/39051/39052/Naval Surface Fire Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Privatization	CPAF	UDLP, Louisville, KY	3.908									
Primary Hardware Development	CPIF/FF	UDLP, Minneapolis, MN	59.553	5.500	11/02	2.000	11/03	3.400	11/04	CONT	CONT	57.424
	CPAF/IF	Raytheon, Tucson, AZ	135.830	25.415	11/02	13.600	11/03	0.800	11/04	CONT	CONT	168.228
	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	9.000	11/04	CONT	CONT	9.000
LCGEU	CPFF	Draper, Cambridge, MA	11.330	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	11.330
	CPAF/IF	Raytheon, Tucson, AZ	1.360									
	WR	NSWC	2.480	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
	VAR	Miscellaneous	0.734	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
ANSR Demonstration	CPFF	Draper, Cambridge, MA	8.616	1.707	N/A	0.000	N/A	0.000	N/A	CONT	CONT	10.323
	WR	NSWC	1.217	0.784	N/A	0.000	N/A	0.000	N/A	CONT	CONT	N/A
	TBD	TBD		1.669								
ERM Demonstration	TBD	TBD	0.000	0.000	N/A	9.150	TBD	22.875	TBD	CONT	CONT	TBD
AMCGD Demonstration	CPFF	AOT, Waldorf, MD	2.498	3.325	N/A	0.000	N/A	0.000	N/A	CONT	CONT	5.823
MEMS	VAR	Miscellaneous	2.000							CONT	CONT	N/A
Systems Engineering	VAR	Miscellaneous	46.678	1.413	11/02	1.466	11/03	1.100	11/04	CONT	CONT	N/A
Award Fees	CPAF/IF	Raytheon, Tucson, AZ	2.230	1.185	11/02	0.700	11/03	0.800	11/04	CONT	CONT	4.915
Subtotal Product Development			375.775	40.998		26.916		37.975		CONT	CONT	CONT
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support	WR/WX	NSWC	6.357	1.501	11/02	1.545	11/03	0.283	CONT	CONT	CONT	N/A
Configuration Management												
Technical Data												
GFE												
Subtotal Support			6.357	1.501		1.545		0.283	CONT	CONT	CONT	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME 32156/39051/39052/Naval Surface Fire Support						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC	22.186	5.794	11/02	8.451	11/03	0.416	11/04	CONT	CONT	N/A
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			22.186	5.794		8.451		0.416		CONT	CONT	N/A
Contractor Engineering Support												
Government Engineering Support	WR/WX	NSWC	12.918	2.875	11/02	1.726	11/03	0.284	11/04	CONT	CONT	N/A
Project Engineering Support	WR/WX	NSWC	3.012	1.354	11/02	1.132	11/03	0.424	11/04	CONT	CONT	N/A
Program Management Support	WR/WX	Various	9.080	2.819	11/02	2.760	11/03	2.704	11/04	CONT	CONT	N/A
Travel	PD	NAVSEA HQ	0.828	0.100	VAR	0.100	VAR	0.100	VAR	CONT	CONT	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			25.838	7.148		5.718		3.512		CONT	CONT	N/A
Total Cost			430.156	55.441		42.630		42.186		CONT	CONT	CONT

Remarks:

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EXHIBIT R-4, Schedule Profile		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603795N/Land Attack Technology	PROJECT NAME AND NUMBER 32156/39051/39052/Naval Surface Fire Support

D. (U) Schedule Profile:

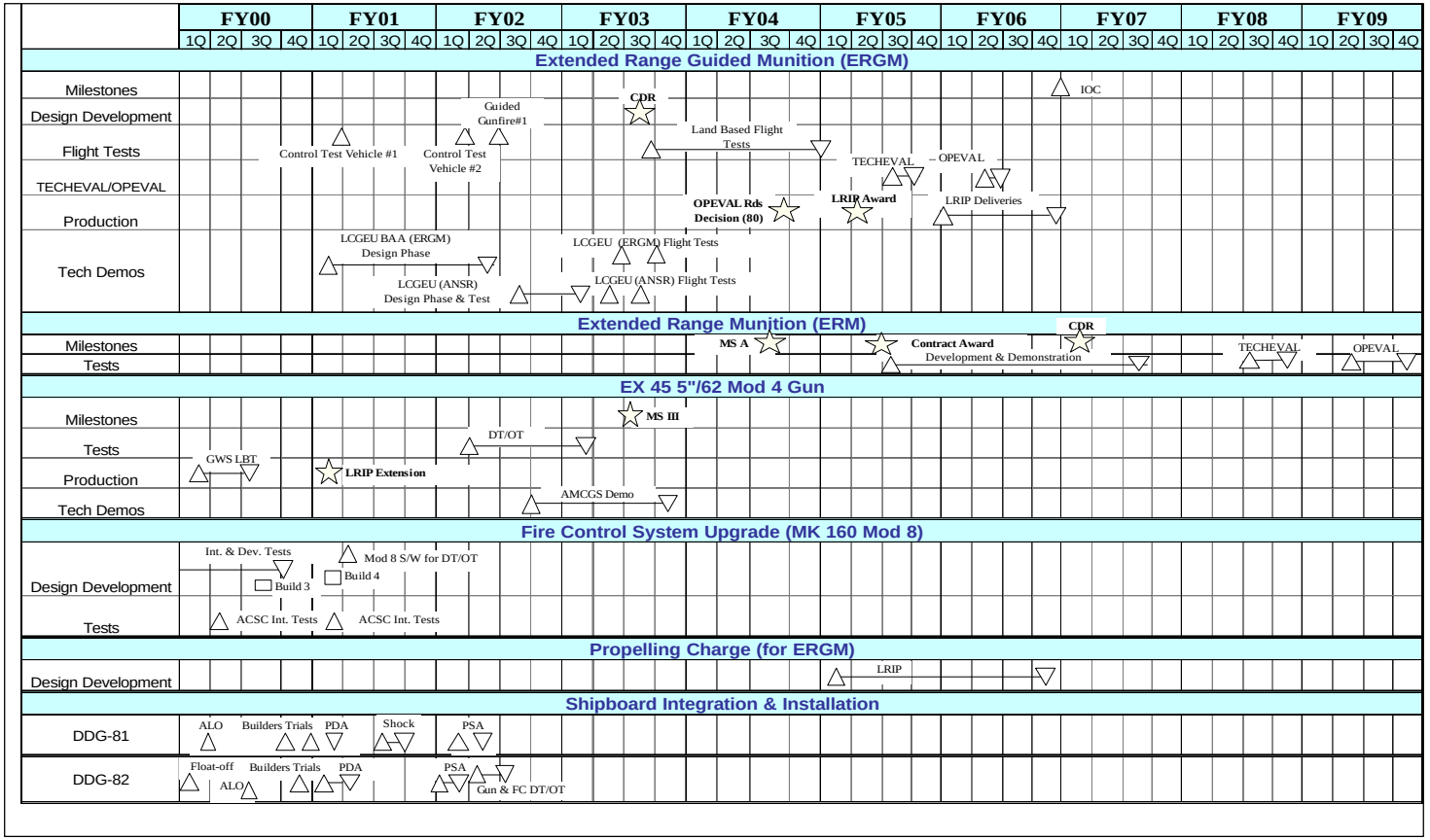

Exhibit R-4a, Schedule Detail					DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32156/39051/39052/Naval Surface Fire Support			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
ERGM								
Control Test Vehicle #2	1Q							
Guided Gun Fire #1	3Q							
Land Based Flight Test Series		3Q-4Q	1Q-4Q					
Critical Design Review (CDR)		3Q						
Unitary Warhead Flight Test		3Q						
Component & All-Up Round Qualifications		4Q	1Q-4Q	1Q				
Pre-Production Round Decision			3Q					
LRIP Decision				2Q				
Technical Evaluation (TECHEVAL)				3Q-4Q				
Operational Evaluation (OPEVAL)				4Q	1Q-2Q			
LRIP Deliveries					1Q-4Q			
MS III					4Q			
IOC					4Q			
ERM								
Milestone A			1Q					
Contract Award			3Q					
Development & Demonstration			4Q	1Q-4Q	1Q-4Q			
Critical Design Review (CDR)					1Q			
Technical Evaluation (TECHEVAL)						3Q-4Q	1Q	
Operational Evaluation (OPEVAL)							2Q-4Q	
Milestone C								1Q
LCGEU BAA (ERGM)								
Design Phase	1Q-2Q							
Flight Tests		1Q & 3Q						
ANSR								
Design Phase	4Q	1Q-2Q						
Flight Tests		2Q & 3Q						
EX 45 5"/62 Mod 4								
Developmental Testing (DT)	2Q-3Q							
Operational Test (OT)		1Q						
MS III		3Q						
AMCGS								
Demonstration Phase	4Q	1Q-4Q						
Propelling Charge (for ERGM)								
LRIP				1Q-4Q	1Q-4Q			
Shipboard Integration & Installation								
DDG-81 PSA	1Q-2Q							
DDG-82 PSA	1Q							
DDG-82 Fun & FC DT	2Q-3Q							
DDG-82 Fun & FC OT		1Q						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N /Land Attack Technology				PROJECT NUMBER AND NAME 32325/Naval Fires Control System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**37.129**	**24.327**	**6.071**	**6.243**	**3.491**	**2.546**	**1.632**	**1.906**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. (U) Mission Description and Budget Item Justification: Naval Fires Control System (NFCS) covers the mission planning and coordination for future Naval Surface Fire Support system requirements. NFCS will plan, coordinate and manage the firing of the new Naval Surface Fires Support (NSFS) weapon systems including the 5"/62 caliber gun and Conventional Munitions. It will be available to amphibious ships, command ships, and the DD-X program if selected by the full service contractor. The NFCS phase 1 will be integrated with the Advanced TOMAHAWK Weapons Control Systems (ATWCS) in 2003 and with Tactical TOMAHAWK Weapons Control Systems (TTWCS) in FY04. Prototyping, demonstrations and developments were conducted during FY00 thru FY02.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32325/Naval Fires Control System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	14.465	9.672	2.163	2.243
RDT&E Articles Quantity				

Funding provides software and system engineering analysis and development, reuse and integration of government and commercial computer programs to support ERGM and other naval weapon applications.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.651	3.651	0.400	0.400
RDT&E Articles Quantity				

Funding support hardware configuration to support NFCS implementation. Support DT validation.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.704	4.723	0.808	0.900
RDT&E Articles Quantity				

Funding provides Technical Direction Agent support, joint requirements investigation, Concept of Operations (CONOPs) scenario development.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32325/Naval Fires Control System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.000	1.700	0.400	0.400
RDT&E Articles Quantity				

Funding provides C4I and combat system interface investigation and analysis to include BFTT, Link 16, TTWCS and other developing C4I system and technology.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.500	2.581	0.300	0.300
RDT&E Articles Quantity				

Funding supports developmental test and evaluation, and logistics support elements development.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.000	2.000	2.000
RDT&E Articles Quantity				

Funding supports operational test and evaluation, and logistics support elements development.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32325/Naval Fires Control System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.000	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports LAM integration design, development and integration includes modification to Vertical Launch System.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	7.020	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding Supports LAM Fire Control system engineering and software development including interface development with NFCS, GPS and other weapon systems.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.789	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports LAM Fire Control program management and logistics support elements development.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 32325/Naval Fires Control System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports LAM Fire Control development test and evaluation.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 79

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA4	0603795N/Land Attack Technology	32325/Naval Fires Control System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	48.403	29.163	28.863	18.606
Current BES/President's Budget (FY 04 President Controls)	37.129	24.327	6.071	6.243
Total Adjustments	-11.274	-4.836	-22.792	-12.363
Summary of Adjustments				
Adjustment for FY2002 SBIR	-1.031			
Adjustment due to LASM Cancellation		-4.263		
Adjustments to align program to support ERGM IOC (18.500) and LASM Cancellation (3.997)			-22.500	
Adjustments to align program to support ERGM IOC				-12.100
FY02 Actuals (30-Sept)	-1.584			
FY02 BTR (July-02)	-8.448			
Other Adjustments	-0.211	-0.573	-0.292	-0.263
Subtotal	-11.274	-4.836	-22.792	-12.363

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 have caused delays in the ERGM program, subsequently impacting the other programs and the NSFS capability. The government is presently negotiating a modification to the ERGM contract that reflects a requirements change to a unitary warhead from submunitions. This will cause IOC to slip from FY05 to FY06 as well as change the dates of major milestones including CDR, Opeval Round Procurement, LRIP, Techeval, Opeval and MSIII. The contractor recently completed its second flight demonstration of the ERGM on schedule which bodes well for meeting the revised contract schedule and supporting an FY06 IOC.

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32325/Naval Fires Control System

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
O&MN 1D4D, 070812N		1.861	2.759	2.702	2.931	3.019	3.110	3.203	19.585	
OPN BL, 511200	0.587	5.571	4.301	2.864	9.222	5.050	5.141	5.235	37.971	

E. ACQUISITION STRATEGY:

A sole source contract has been awarded to GDIS for Phase 1. Phase 1 is being executed in 2 steps. Step 1 is to integrate the NFCS Phase 1 with ATWCS and Step 2 is to integrate NFCS Phase 1 with TTWCS.

F. MAJOR PERFORMERS:

PMA282 - Patuxent River, MD. Systems engineering and software development support. Awarded January 2001.

Exhibit R-3 Cost Analysis (page 1) | DATE: February 2003

APPROPRIATION/BUDGET ACTIVITY: RDT&E, N / BA-4 | PROGRAM ELEMENT: 0603795N/Land Attack Technology | PROJECT NUMBER AND NAME: 32325/Naval Fires Control System

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Software Development	SS/CPAF	GDIS, Arlington, VA	27.517	0.500	11/02	0.300	11/03	0.300	11/04	CONT	CONT	TBD
	SS/CPAF	LM/MDS, Valley Forge, PA	18.952	0.500	11/02	0.400	11/03	0.400	11/04	CONT	CONT	
	WR/WX	NSWC, Dahlgren, VA	2.300	4.050	10/02	1.000	10/03	1.000	10/04	CONT	CONT	
	VAR	VARIOUS	1.619							CONT	CONT	
	WR/WX	SSC/SD	2.375	1.500	10/02	0.400	10/03	0.400	10/04	CONT	CONT	
Systems Engineering	WR	SSC/SD	2.951							CONT	CONT	
	WR/WX	NSWC, Dahlgren, VA	12.405	4.311	10/02	0.500	10/03	0.672	10/04	CONT	CONT	
	SS/CP	VITRO/BAE	0.670	0.000	N/A	0.000	N/A	0.000	N/A	CONT	CONT	
	VAR	VARIOUS	1.804							CONT	CONT	
Ancillary Hardware Development	WR/WX	NUWC, Keyport Division	8.613	1.500	10/02	0.400	10/03	0.400	10/04	CONT	CONT	
	WR/WX	NSWC/PT HUE, CA	3.874	0.880	10/02	0.403	10/03	0.403	10/04	CONT	CONT	
	VAR	PMFATDS	1.587	2.000	10/02	0.000	N/A	0.000	N/A	CONT	CONT	
	SS/CPAF	JHU/APL	1.070	0.300	11/02	0.000	N/A	0.000	N/A	CONT	CONT	
	WR	NSWC, Dahlgren, VA	2.100	0.140	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	4.181							CONT	CONT	
TERMINATED	SS/CPAF	LM/MDS, Valley Forge, PA	12.131							CONT	CONT	
	SS/CPFF	UDLP	0.455							CONT	CONT	
	WR	NSWC, Dahlgren, VA	1.162							CONT	CONT	
	WR	SSC/SD	0.486							CONT	CONT	
LAM FC Systems Engineering	SS/CPFF	JHU/APL	0.386							CONT	CONT	
TERMINATED	WR	NSWC/PT HUE, CA	0.361							CONT	CONT	
Award Fees			3.979	0.000	TBD					CONT	CONT	
Subtotal Product Development			113.519	15.681		3.403		3.575		CONT	CONT	

Remarks:

Development Support Equipment												
Software Development		NSWC, Panama City	0.049									
Training Development				0.500		0.000		0.000				
Integrated Logistics Support	VAR	VARIOUS	4.888	1.387	Various	0.105	Various	0.105	Various	CONT	CONT	
Configuration Management												
Technical Data												
GFE												
Subtotal Support			4.937	1.887		0.105		0.105		CONT	CONT	

Remarks:

CLASSIFICATION:

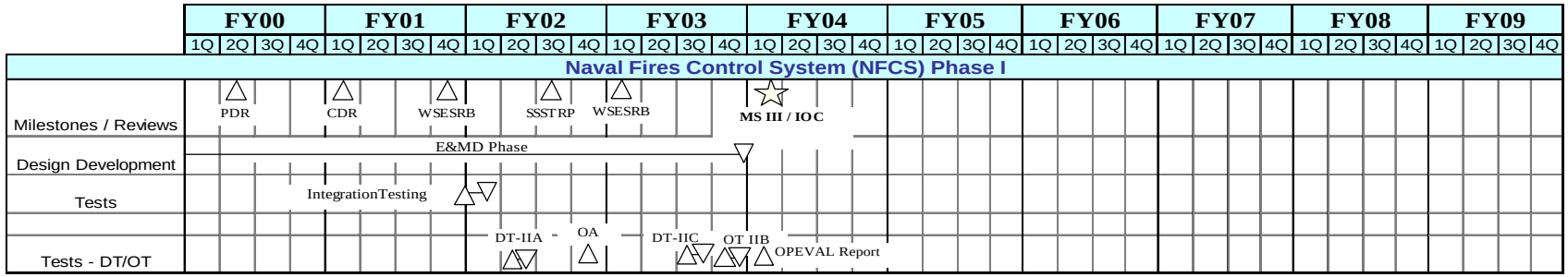
Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME 32325/Naval Fires Control System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR/WX	NSWC/PT HUE, CA	2.800	2.581	10/02	0.300	10/03	0.300	10/04	CONT	CONT	
	VAR	Various	1.500									
Operational Test & Evaluation	VAR	Various	1.000	2.000	10/02	2.000	10/03	2.000	10/04			
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			5.300	4.581		2.300		2.300		0.000		
Remarks:												
BTR			0.000									
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VAR	VARIOUS	2.282	2.078	Various	0.213	Various	0.213	Various			
Travel	PD	NAVSEA HQ	0.305	0.100	Various	0.050	Various	0.050	Various	CONT	CONT	
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			2.587	2.178		0.263		0.263				
Remarks:												
Total Cost			126.343	24.327		6.071		6.243				
Remarks:												

R-1 SHOPPING LIST - Item No. 79

CLASSIFICATION:

EXHIBIT R-4		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT NAME AND NUMBER 0603795N/Land Attack Technology	PROJECT NAME AND NUMBER 32325/Naval Fires Control System

D. (U) Schedule Profile:



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32325/Naval Fires Control System			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
NFCS								
Engineering & Manufacturing Development	1Q-4Q	1Q-4Q						
Integration Tests	1Q							
Developmental Testing (DT-IIA)	2Q							
SSSTRP	3Q							
Operational Assessment (DT-IIB/OA)	4Q							
Technical Evaluation (TECHEVAL / DT-IIC))		2Q						
Operational Evaluation (OPEVAL / OT-IIB)		3Q						
OPEVAL Report		4Q						
Milestone III / IOC			1Q					

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME K2409/Land Attack Standard Missile			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**9.009**							
RDT&E Articles Qty								

A. 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	K2409/Land Attack Standard Missile

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.610			
RDT&E Articles Quantity				

Integrate hardware and software.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.400			
RDT&E Articles Quantity				

Round-level integration.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.500			
RDT&E Articles Quantity				

Ground testing (Battery).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	K2409/Land Attack Standard Missile

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.499			
RDT&E Articles Quantity				

Completed section level and missile level environmental qualification.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.500			
RDT&E Articles Quantity				

Validated 6-DOF modeling and simulation.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.500			
RDT&E Articles Quantity				

Documentation and storage.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	K2409/Land Attack Standard Missile

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	9.399			
Current BES/President's Budget (FY 04 President Controls)	9.009			
Total Adjustments	-0.390	0.000	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions				
Congressional rescissions				
SBIR/STTR Transfer	-0.160			
Economic Assumptions	-0.045			
Reprogrammings				
Congressional increases				
Reprogrammings	-0.185			
Subtotal	-0.390	0.000	0.000	0.000

Schedule:

Not applicable

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	K2409/Land Attack Standard Missile

D. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

E. 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.

F. MAJOR PERFORMERS:

Raytheon Standard Missile, Tucson, Az., System Engineering.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME K2409/Land Attack Standard Missile						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											5.700	
Ancillary Hardware Development	WR	NSWC/Dahlgren, Va	5.700								1.600	
	WR	VAR	1.600								0.000	
Component Development											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering	WR	VAR	6.686								6.686	
	SS/CPAF	Raytheon Missile Systems, Tucson, Az	36.054								36.054	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees			3.574								3.574	
Subtotal Product Development			53.614	0.000		0.000		0.000		0.000	53.614	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support	WR	VARIOUS	0.542								0.542	
Configuration Management	WR	VARIOUS	0.965								0.965	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			1.507	0.000		0.000		0.000		0.000	1.507	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME K2409/Land Attack Standard Missile						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	WSMR	1.225								1.225	
	WR	VAR	1.085								1.085	
Operational Test & Evaluation	WR	NAWC/AD, PT MUGU	0.400								0.400	
	WR	VAR	0.210								0.210	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			2.920	0.000		0.000		0.000		0.000	2.920	
Remarks:												
Contractor Engineering Support	VAR	VAR	1.575								1.575	
Government Engineering Support											0.000	
Program Management Support	VAR	VAR	1.353								1.353	
Travel	PD	NAVSEA HQ	0.150								0.150	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			3.078	0.000		0.000		0.000		0.000	3.078	
Remarks:												
Total Cost			61.119	0.000		0.000		0.000		0.000	61.119	
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile

DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603795N/Land Attack Technology

PROJECT NUMBER AND NAME: K2409/Land Attack Standard Missile

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones													MS C														IOC		FRP Dec		First Deploy	
Prototype Phase																																
Radar System Development				PDR		CDR						PRR									FCA		PCA									
EDM Radar Delivery										Lb	2	Flt Rel 3	4	5	6	7																
Software 1XXSW Delivery 2XXSW Delivery				SSR																												
Test & Evaluation Milestones Development Test Operational Test	ENGR Test Flight DT/OT								TRR		DT-IIA		OT-IIA	DT-IIB1			DT-IIB2			DT-IIC OT-IIB	TECHEVAL						OT-IIC OPEVAL						
Production Milestones LRIP I FY 05 LRIPII FY 06 FRP FY 07													LRIP I Start				LRIP II Start														FRP Start	
Deliveries																							LRIP I (20)				LRIP II (30)				Lot 24 (36)	

R-1 SHOPPING LIST - Item No. 79

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME K2409/Land Attack Standard Missile			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development								
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)								
Developmental Testing (DT-IIA)								
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)	1Q							
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)	1Q							
Low-Rate Initial Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**33.797**	**33.374**	**14.733**	**8.712**	**8.619**	**7.837**	**1.888**	**0.760**
RDT&E Articles Qty								

*Funding includes FY 2002 Congressional Add for NFN Project 32871 - $29.096M
**Funding includes FY 2003 Congressional Adds for NFN Project 32871 - $7.334M; SAIP Project 39209 - $1.076M

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Naval Fires Network (NFN) 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. The Semi-Automated Imagery Intelligence (IMINT) Processing Program (SAIP) will make imagery a more responsive surce in providing the commander with dominant battlefield awareness.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.903	0.360	0.000	0.000
RDT&E Articles Quantity				

Development of hardware for NFN.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.100	1.659	0.000	0.000
RDT&E Articles Quantity				

Development of software for NFN.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.350	0.345	0.000	0.000
RDT&E Articles Quantity				

Testing of on-board and land-based facilities.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	8.800	2.800	0.000	0.000
RDT&E Articles Quantity				

Development of Tactical Dissmeination Module (TDM).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.200	1.034	1.010	0.250
RDT&E Articles Quantity				

Acquistion Planning/ DoD Documentation.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	17.609	16.000	4.300	0.000
RDT&E Articles Quantity				

Support hardware/software, GFE buy, installation and upgrades for existing interfaces and communications.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.830	1.600	0.000	0.000
RDT&E Articles Quantity				

Training /Training System Development.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.550	0.000	1.786
RDT&E Articles Quantity				

P3I and future Limited Objective Experiments/ Fleet Battle Experiments. (LOE/FBE)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.245	0.000	0.000
RDT&E Articles Quantity				

X, Ku, Phased Array Antenna System Development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.900	0.700	0.825	0.900
RDT&E Articles Quantity				

Program Management Support.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.950	1.139
RDT&E Articles Quantity				

DT/OT&E.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.398	0.000
RDT&E Articles Quantity				

Spiral Development

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.100	0.950	1.150
RDT&E Articles Quantity				

Acquisition Strategy, AoA, TEMP and other Rrequired Acquisition Documentation, Technical Data Collection

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.105	0.000	0.000	0.000
RDT&E Articles Quantity				

Portion of extramural program reserved for Small Business Innovation. Research assessment in Accordance with 15 USC 638.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	2.100	0.000	0.000
RDT&E Articles Quantity				

Provides onboard ship and integrated logistics support

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.805	4.300	3.487
RDT&E Articles Quantity				

Rqmts Definition - System Eng, Config Mgt, Architecture Support

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	1.076	0.000	0.000
RDT&E Articles Quantity				

Begin software development of a Semi-Automated Imagery Intelligence (IMINT) Processing Program design.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	34.191	34.764	34.852	49.636
Current BES/President's Budget (FY 04 President Controls)	33.797	44.374	14.733	8.712
Congressional Recission Earmark		-11.000		
Total Adjustments	-0.394	-1.390	-20.119	-40.924
Summary of Adjustments				
NFN Reduction			-17.500	-25.000
Congressional Plus Up		8.600		
FY02 BTR (July-02)	-0.097			
NFCS RDTE&N Reduction due to LA		2.000	-2.000	
Naval Fire Network Transition from R&D				-15.700
Congressional Recission Earmark		-11.000		
Other Adjustments	-0.297	-0.990	-0.619	-0.224
Subtotal	-0.394	-1.390	-20.119	-40.924

Schedule:

N/A

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	32927/32871/39209 Naval Fires Network

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Naval Fire Control System/ 511200				5.0	5.0	5.0	28.8	23.8	CONT	67.6

RDT&E,N: NAVAIRSYSCOM PE0204152N, FY 2001 $5.765M

E. 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.

F. MAJOR PERFORMERS:

HQ/SAF - Develop and Build Naval Fires Network System Hardware/Software

Naval Air Warfare Center (China Lake) - Systems Engineering and Interface Development/Test

Northrup Grumman Corporation (NGC), Electronic Sensors and Systems Division (ESSD), of Baltimore, Maryland

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF/IF/AF	SAF/FMB/OLE (Air Force)	26.679	16.360	11/02					CONT	43.039	
Ancillary Hardware Development	CPFF/IF/AF	VARIOUS	8.800	2.800	11/02					CONT	11.600	
Component Development	CPFF/IF/AF	VARIOUS		1.245	11/02	4.300	N/A			CONT	5.545	
Ship Integration	WR	NSWC PHD, Pt. Hueneme, CA	1.270		11/02					CONT	1.270	
Ship Suitability	WR	VARIOUS								CONT	0.000	
Systems Engineering	VAR	VARIOUS		2.355	N/A	4.300	11/03	3.487	11/04	CONT	10.142	
Training Development	CPFF/IF/AF	VARIOUS	1.100	1.600	N/A					CONT	2.700	
Licenses	VAR	VARIOUS								CONT	0.000	
Tooling										CONT	0.000	
GFE	WR/MIPR	SAF/FMB/OLE (Air Force)	2.000							CONT	2.000	
Award Fees										CONT	0.000	
Subtotal Product Development			39.849	24.360		8.600		3.487		0.000	76.296	
Remarks:												
Development Support		Various		1.034	11/02	1.010	11/03	0.250	11/04		2.294	
Software Development		Various	2.100	1.659	11/02	2.398	11/03				6.157	
Software Development (SAIP)	CPFF/IF/AF	Northrup Grumman	0.000	1.076	03/03						1.076	
Training Development		Various	2.830								2.830	
Integrated Logistics Support		Various		2.100							2.100	
Configuration Management											0.000	
Technical Data		Various	0.950	2.100		0.950		1.150			5.150	
GFE		Various	0.600								0.600	
Award Fees											0.000	
Subtotal Support			6.480	7.969		4.358		1.400		0.000	20.207	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation		TBD	0.350			0.475		0.570			0.825	
Operational Test & Evaluation						0.475		0.570			0.475	
Live Fire Test & Evaluation		TBD	5.266	0.345				1.786			5.611	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			5.616	0.345		0.950		2.925		0.000	6.911	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	VAR	VARIOUS	1.992	0.700	N/A	0.825	N/A	0.900			3.517	
Travel	PD	NAVSEA HQ	0.350								0.350	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			2.342	0.700		0.825		0.900		0.000	3.867	
Remarks:												
Total Cost			54.287	33.374		14.733		8.712		0.000	102.394	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/ERF,D**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR/MIPR	SAF/FMB/OLE (Air Force)	27.498								27.498	
Ancillary Hardware Development	WR	NAWC China Lake	3.000								3.000	
Aircraft Integration											0.000	
Ship Integration	WR	NSWC PHD, Pt. Hueneme, CA	5.793								5.793	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			36.291	0.000		0.000		0.000		0.000	36.291	

Remarks:

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Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/ERF,D**		PROGRAM ELEMENT 0603795N/Land Attack Technology			PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support											0.000	
Software Development	WR/MIPR	SAF/FMB/OLE (Air Force)	2.000								2.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses	WR	NSWC Dahlgren, VA	2.028								2.028	
GFE											0.000	
Award Fees											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			4.028	0.000		0.000		0.000		0.000	4.028	

Remarks:

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/ERF,D**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation		Various	13.133								13.133	
Live Fire Test & Evaluation	CPFF/IF/AF	Various	2.551								2.551	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			15.684	0.000		0.000		0.000		0.000	15.684	
Remarks:												
Contractor Engineering Support			13.683								13.683	
Government Engineering Support			0.260								0.260	
Program Management Support			3.514								3.514	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			17.457	0.000		0.000		0.000		0.000	17.457	
Remarks:												
Total Cost			73.460	0.000		0.000		0.000		0.000	73.460	
Remarks:												

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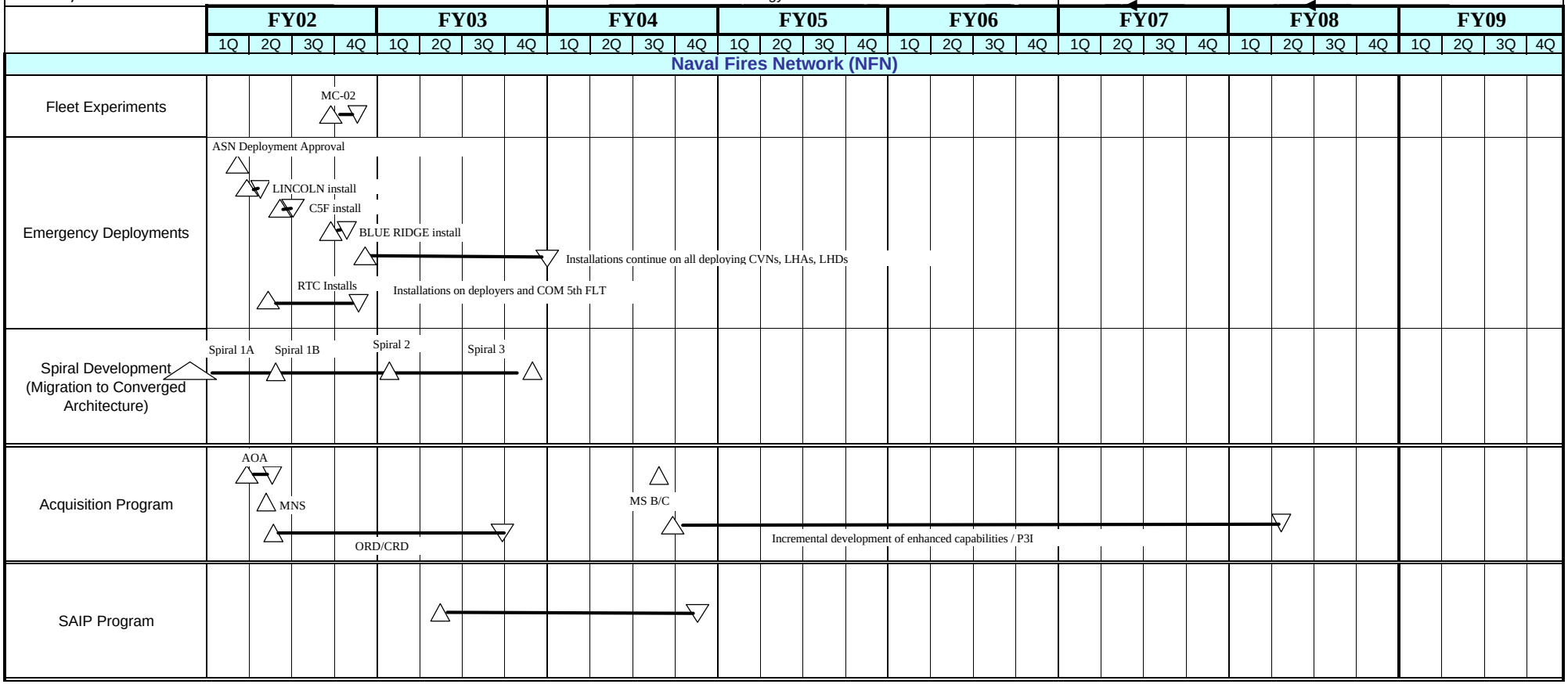
CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

PROGRAM ELEMENT NUMBER AND NAME: 0603795N/Land Attack Technology

PROJECT NUMBER AND NAME: 32927/32871/39209 Naval Fires Network



R-1 SHOPPING LIST - Item No. 79

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 32927/32871/39209 Naval Fires Network			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Fleet Experiments								
Millenium Challenge '02 (MC02)	3Q-4Q							
Emergency Deployments								
ASN Deployment Approval	1Q							
LINCOLN Install	1Q-2Q							
COMFIFTHFLT Install	2Q-3Q							
BLUE RIDGE Install	3Q-4Q							
Continuing Installs on all Deploying CVN, LHA, LHD	4Q	1Q-4Q	1Q					
RTC installations on deployers	2Q-4Q							
Spiral development (Migrationto Converged Architecture)								
Spiral 1A	1Q-2Q							
Spiral 1B	2Q-3Q							
Spiral 2		1Q-3Q						
Spiral 3		4Q						
Acquisition Program								
Analysis of Alternatives (AoA)	1Q-2Q							
Milestone B/C			3Q					
Mission Needs Statement (MNS)	2Q							
ORD/CRD	2Q-4Q	1Q-3Q						
Incremental Development of Enhanced Capabilitys/P3I			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q	

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 39053/Integrated Deepwater System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**2.071**	**11.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: These funds provide for evaluation of NDI Intermediate Caliber Gun Systems and interfacing fire control system for application in USCG Cutters in the Deepwater Program. The evaluation effort will include operability/maintainability demonstrations, engineering design assessment on selected intermediate caliber gun systems and planning of qualification process on selected intermediate caliber gun system and appropriate ammunition along with interfacing fire control and support systems in preparation for fleet introduction.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	39053/Integrated Deepwater System

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.369	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports system architecture and design.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.857	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports the Intermediate Calibur gun system operability/maintainability demonstrations.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.435	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding provides for engineering design assessment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603795N/Land Attack Technology	39053/Integrated Deepwater System	

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.410	0.000	0.000	0.000
RDT&E Articles Quantity				

Funding supports qualification planning including review of NDI gun/ammo international test results.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	11.000	0.000	0.000
RDT&E Articles Quantity				

Funding provides for Gun/Ammo qualification test and procurement of 57mm Ammo.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000
RDT&E Articles Quantity				

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EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	39053/Integrated Deepwater System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	2.081	0.000	0.000	0.000
Current BES/President's Budget (FY 04 President Controls)	2.071	0.000	0.000	0.000
Congressional Recission Earmark		11.000	0.000	0.000
Total Adjustments	-2.081	11.000	0.000	0.000
Summary of Adjustments				
Sec. 313, PL 107-206: Revised	-0.004	0.000	0.000	0.000
Economic Assumptions (SEC.813)	-0.006	0.000	0.000	0.000
Congressional Recission Earmark	0.000	11.000	0.000	0.000
Subtotal	-0.010	11.000	0.000	0.000

Schedule:

N/A

Technical:

N/A

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603795N/Land Attack Technology	39053/Integrated Deepwater System

D. OTHER PROGRAM FUNDING SUMMARY: **N/A**

E. ACQUISITION STRATEGY:

The Naval Surface Warfare Center, Dahlgren Division, is the lead agency for conducting the gun/ammo evaluation and is to develop an evaluation plan with operability /maintainability demonstrations and engineering assessment activity. The operability/maintainability demonstration is to be conducted at the NSWC Louisville facility. NSWC Dahlgren facility will develop a qualification plan for the selected gun and ammo including an assessment of international naval testing of the selected gun system and interface requirements. Upon completion of the government conducted evaluation process and architectural design assessment, the USN will recommend the appropriate ICGS for application in USCG ships. The ICGS evaluation is to be conducted by NSWC since they are responsible for all USN gunnery.

F. MAJOR PERFORMERS:

NSWC Dahlgren - Integrated Deepwater System Demonstration
NSWC Louisville - Integrated Deepwater System Demonstration

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 39053/Integrated Deepwater System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
IDS Demonstration	WR	NSWC Louisville	0.865	0.000		0.000		0.000		0.000	0.865	
	WX	NSWC Dahlgren	1.196	11.000		0.000		0.000		0.000	12.196	
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Component Development											0.000	
Ship Integration											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			2.061	11.000		0.000		0.000		0.000	13.061	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 39053/Integrated Deepwater System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel			0.010								0.010	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.010	0.000		0.000		0.000		0.000	0.010	
Remarks:												
Total Cost			2.071	11.000		0.000		0.000		0.000	13.071	
Remarks:												

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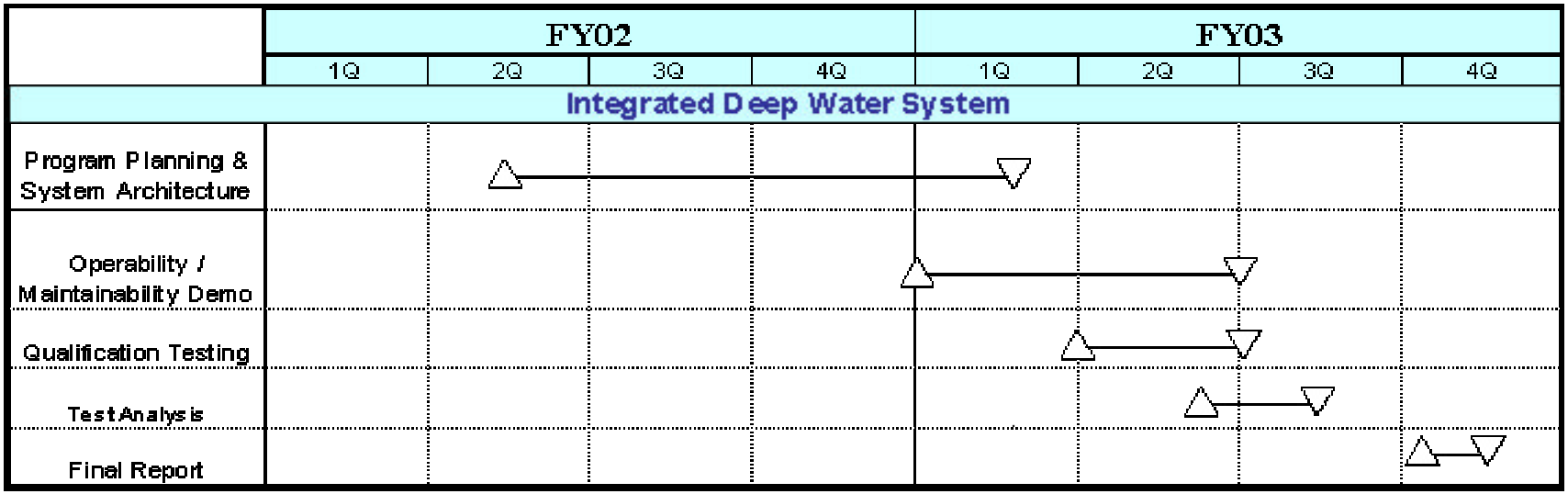
EXHIBIT R4, Schedule Profile		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603795N/Land Attack Technology	PROJECT NUMBER AND NAME 39053/Integrated Deepwater System



R-1 SHOPPING LIST - Item No.79

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603795N/Land Attack Technology				PROJECT NUMBER AND NAME 39053/Integrated Deepwater System			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase		1Q-3Q						
System Design Review (SDR)								
Milestone II (MSII)								
Contract Preparation								
Software Specification Review (SSR)	4Q							
Preliminary Design Review (PDR)								
System Development		1Q-2Q						
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)		1Q						
Developmental Testing (DT-IIA)			2Q					
Eng Dev Model (EDM) Radar Delivery - Lab	3Q							
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initial Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

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EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603851M Non-Lethal Warfare DEM/VAL**				PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**					
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Project Cost	**32.524**	**25.866**	**43.445**	**43.492**	**44.108**	**44.587**	**45.173**	**45.707**	**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.

(U) B. ACCOMPLISHMENTS/PLANNED PROGRAM:

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.630**	**1.400**	**1.430**	**1.550**
RDT&E Articles Qty				

Execution oversight, administration and support of the Joint NLW Program and technologies database.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.800**	**0.430**	**0.645**	**0.645**
RDT&E Articles Qty				

Evaluation of NLWs by Service warfighting laboratories and Joint Forces Command (JFCOM) for direct user feedback of various NL technologies and munitions.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.950**	**1.080**	**1.612**	**1.612**
RDT&E Articles Qty				

Modeling and simulation (M&S) of NLWs in the Joint Conflict and Tactical Simulation (JCATS) model and performance effects data collection/population to demonstrate/analyze NL effects and optimze training.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.415**	**0.540**	**0.540**	**0.540**
RDT&E Articles Qty				

Pursuit of new technology through open competition of industry, academia and government laboratory sources for NL capabilities.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.450**	**0.430**	**1.075**	**1.505**
RDT&E Articles Qty				

Objective Individual Combat Weapons (OICW) – Continue development of NL munitions for the "next generation" combat weapon that will exploit the ability to air burst munitions with NL payloads at longer ranges with existing systems.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603851M Non-Lethal Warfare DEM/VAL**		PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**	
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.140**	**1.100**	**1.129**	**1.149**
RDT&E Articles Qty				

Program support for each service's coordination and oversight of the Joint NLW Program.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.700**	**0.860**	**1.075**	**1.075**
RDT&E Articles Qty				

NL Mortar – Continue development of NL mortar casing devises for delivery of NL payloads at extended ranges..

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.320**	**0.900**	**0.000**	**0.000**
RDT&E Articles Qty				

Mk19 NL Munition - Development of a NL munition for the 40mm Mk19 Grenade machine gun.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.288**	**1.288**	**0.000**	**0.000**
RDT&E Articles Qty				

Non-lethal technology innovation initiative to allow pursuit of new NL materials and technologies through a network of academic institutions.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**10.440**	**5.859**	**4.518**	**4.857**
RDT&E Articles Qty				

Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) - Jointly sponsored effort that continues the development of a demo asset for evaluation , testing and target assessment of a High Mobility Multipurpose Wheeled Vehicle (HMMWV) mounted directed energy system.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.500**	**1.612**	**1.612**	**0.538**
RDT&E Articles Qty				

Advanced Tactical Laser (ATL) Advanced Concept Technology Demonstration (ACTD) - Jointly sponsored effort to demonstrate technology concepts to satisfy the critical mission needs for an ultra-precision strike capability.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.725**	**1.290**	**0.810**	**0.000**
RDT&E Articles Qty				

Clear A Space Device - Currently in Concept Exploration, pending Phase A Decision Review to advance downselects into Component Advanced Development (CAD).

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603851M Non-Lethal Warfare DEM/VAL**		PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**	
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.150**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Running Gear Entanglement System (RGES) - Complete joint evaluation of candidate capabilities to downselect and advance into a service acquisition cycle.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.950**	**1.571**	**1.106**	**0.140**
RDT&E Articles Qty				

Mobility Denial System (MDS) - Joint evauation, analysis and testing of slippery substances and delivery methods/volumnes.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
\\\	**3.137**	**1.752**	**5.862**	**6.238**
RDT&E Articles Qty				

Studies and Analysis – Medical and NL casualty data research and collection; human effects assessments; acceptability analysis; and technical studies/analysis of emerging technologies for possible NL application.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**3.775**	**3.174**	**5.884**	**6.090**
RDT&E Articles Qty				

Concept Exploration Program – Explore and evaluate technical NL solutions for crowd control, area denial to personnel, vehicles and boats to satisfy critical joint mission tasks.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.400**	**0.430**	**0.430**	**0.430**
RDT&E Articles Qty				

Joint Integration Program (JIP) – Select and test commercial products that will meet the Joint Services' requirement for specific NL capability set common items.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.736**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty				

Conduct and evaluate concepts of employment for current and emerging NL technologies for operational utility within the naval force protection mission.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.368**	**0.000**	**1.500**	**1.300**
RDT&E Articles Qty				

Develop/expand the NATO Measures of Effectivess (MOE) efforts, chaired by the U.S. to provide input for Defense Capabilities Initiative (DCI) and NATO assessment of NLW in the Defense planning process. Expanded interaction with COCOM staffs to identify emerging NLW capabilities and their utility in theater operations and Homeland Security missions.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**	PROGRAM ELEMENT NUMBER AND NAME **0603851M Non-Lethal Warfare DEM/VAL**		PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**	
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**1.650**	**2.150**	**2.958**	**3.225**
RDT&E Articles Qty				

Pulsed Energy Projectile (PEP) – Explore the development of laser hardware and extensive human effects characterization research and to continue refinement of bio-effects characterization and optimization of lasers as a NL capability.

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005
Accomplishment/Effort Subtotal Cost	**0.000**	**0.000**	**11.259**	**12.598**
RDT&E Articles Qty				

System development and design of concept exploration downselected items to proceed into the acquisition cycle to provide NL technology solutions to critical joint mission tasks.

(U) Total $	0.000	32.524	25.866	43.445	43.492

(U) PROJECT CHANGE SUMMARY:

	FY2002	FY2003	FY2004	FY2005
(U) FY 2003 President's Budget:	**35.095**	**24.082**	**26.032**	**26.450**
(U) Adjustments from the President's Budget:				
(U) Congressional/OSD Program Reducti	-0.095	-0.616	-0.782	-1.164
(U) Congressional Rescissions				
(U) Congressional Increases		2.400		
(U) PBD 751C			18.000	18.000
(U) Reprogrammings	-2.432			
(U) SBIR/STTR Transfer	-0.044			
(U) Minor Affordability Adjustment			0.195	0.206
(U) FY 2004 President's Budget:	**32.524**	**25.866**	**43.445**	**43.492**

CHANGE SUMMARY EXPLANATION:
(U) Funding: See Above.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
(U) PAN,MC BLI 162800, Non-Lethal Munitions	4.176	5.313	3.671	4.166	4.252	3.797	3.858	3.935	Continuing	Continuing
(U) PMC BLI 237100, Operations Other Than	1.594	1.498	1.349	1.513	1.538	1.565	1.617	1.647	Continuing	Continuing

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-4 Adv Comp Dev & Prototypes	**0603851M Non-Lethal Warfare DEM/VAL**	**C2319 Non-Lethal Weapons Program**

(U) Related RDT&E: Not Applicable.

(U) D. ACQUISITION STRATEGY:

The JNLW Program strategy is to continue to pursue the fielding of NLW systems through modifying Commercial-Off-The-Shelf (COTS) products for near term capabilities and the development of new technology NLW systems in various stages of acquisition. These are balanced with efforts in modeling and simulation, experimentation, and state-of-the-art technology investment. The acquisition strategy for each weapon system is largely lead service dependent.

(U) E. MAJOR PERFORMERS:

FY02-FY05 - ARDEC, Picatinny Arsenal, NJ. Development and evaluation of the Objective Individual Combat Weapons (OICW) program, the Non-Lethal (NL) Mortar program, and the Mk19 NL Munition program.

FY02-FY05 - Raytheon Company, Rancho Cucamonga, CA. Working with the Air Force Research Laboratory at Kirtland Air Force Base, NM on the Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) to continue the evaluation, testing and target assessment of a HMMWV mounted directed energy system.

(U) SCHEDULE PROFILE: Not Applicable.

Exhibit R-3 Cost Analysis								DATE: February 2003						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**		PROGRAM ELEMENT **0603851M Non-Lethal Warfare DEM/VAL**				PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development	MIPR	USAIC, Ft. Benning, GA	2.999	0.400	12/01	0.000		0.000		0.000		Cont.	Cont.	
Product Development	MIPR	SMDC, Huntsville, AL	1.400	0.000		0.000		0.000		0.000		Cont.	Cont.	
Product Development	MIPR	ARDEC, Picatinny, NJ	45.041	4.341	10/01	3.805	10/02	7.531	10/03	7.810	10/04	Cont.	Cont.	
Product Development	MIPR	SOCOM, McDill AFB, FL	0.000	1.500	06/02	1.500	03/03	1.500	12/03	0.500	12/04	Cont.	Cont.	
Product Development	WR	NSWC, Various	10.161	1.714	Various	0.540	Various	1.152	Various	1.528	Various	Cont.	Cont.	
Product Development	MIPR	Kirtland AFB, NM	16.966	10.440	02/02	5.886	02/03	3.873	12/03	3.942	12/04	Cont.	Cont.	
Product Development	MIPR	JWCF, Ft. Monroe, VA	0.769	0.400	01/02	0.552	02/03	0.645	02/04	0.645	02/05	Cont.	Cont.	
Product Development	MIPR	Brooks AFB, TX	2.313	2.910	02/02	0.800	02/03	5.055	02/04	5.325	02/05	Cont.	Cont.	
Product Development	WR/RCP	MCSC, Quantico,VA	11.349	3.695	11/01	4.096	11/02	5.658	11/03	4.207	11/04	Cont.	Cont.	
Product Development	MIPR	NSMA,Arlington, VA	2.009	1.650	04/02	2.160	01/03	2.958	01/04	3.225	01/05	Cont.	Cont.	
Product Development	RCP	MCLB, Albany,GA	0.550	0.504	01/02	0.300	01/03	0.300	01/04	0.300	01/05	Cont.	Cont.	
Product Development	MIPR	Various (M&S)	0.793	0.550	Various	1.080	Various	1.613	Various	1.613	Various	Cont.	Cont.	
Product Development	MIPR	Various (TIP)	3.670	0.415	Various	0.540	Various	0.540	Various	0.540	Various	Cont.	Cont.	
Product Development	MIPR	Various (Services)	6.517	1.975	Various	2.828	Various	9.425	Various	10.573	Various	Cont.	Cont.	
Subtotal Product Dev			104.537	30.494		24.087		40.250		40.208		Cont.	Cont.	

Remarks:

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support Cost	WR	MCSC, Quantico, VA	2.709	0.400	11/01	0.430	11/02	0.430	11/03	0.430	11/04	Cont.	Cont.	
Support Cost	WR	NSWC, Dahlgren, VA	1.483	0.370	10/01	0.420	10/02	0.420	10/03	0.420	10/04	Cont.	Cont.	
Support Cost	RCP	CTQMSC, Quantico, VA	4.985	0.584	12/01	0.440	12/02	0.470	12/03	0.570	12/04	Cont.	Cont.	
Support Cost	Various	Various	3.618	0.676	Various	0.489	Various	1.875	Various	1.864	Various	Cont.	Cont.	
Subtotal Support			12.795	2.030		1.779		3.195		3.284		Cont.	Cont.	

Remarks:

Exhibit R-3 Cost Analysis												DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-4 Adv Comp Dev & Prototypes**		PROGRAM ELEMENT **0603851M Non-Lethal Warfare DEM/VAL**				PROJECT NUMBER AND NAME **C2319 Non-Lethal Weapons Program**								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal T&E			0.000	0.000		0.000		0.000		0.000		Cont.	Cont.	
Remarks:														
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
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	0.000	
Remarks:														
Total Cost				32.524		25.866		43.445		43.492		Cont.	Cont.	

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification									DATE: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**						R-1 ITEM NOMENCLATURE 0603857N - Joint Combat Identification Evaluation Team (JCIET)					
COST ($ in Millions)	Prior Years Cost	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Cost to Complete	Total Program
Total PE Cost	**26.552**	**12.994**	**14.084**	**16.765**	**15.218**	**15.779**	**16.854**	**17.174**	**17.497**	**Continuing**	**Continuing**
X2691 - Joint Combat Identification Evaluation Team	**26.552**	**12.994**	**14.084**	**16.765**	**15.218**	**15.779**	**16.854**	**17.174**	**17.497**	**Continuing**	**Continuing**
											0.000
											0.000
											0.000
											0.000
											0.000
Quantity of RDT&E Articles											**0**

A. (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. JCIET will employ the equipment and personnel of all four services, special operations forces, and approved allied/coalition forces during "live" field evaluations conducted in conjunction with U.S. Joint Forces Command (USJFCOM) sponsored Category 2 (Cat 2) training exercises. 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 offers direct/indirect support by providing either subject matter expertise and/or funding to promising CID enhancements. 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) 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.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION because it includes efforts to evaluate integrated technologies in a realistic operational environment to assess the performance potential of current Tactics, Techniques, and Procedures (TTP), weapons systems, and helps expedite technologies that meet joint warfighters' needs.

R-1 SHOPPING LIST - Item No. 81

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603857N - Joint Combat Identification Evaluation Team	X2691 - Joint Combat Identification Evaluation Team (JCIET)

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Field Evaluations	4.354	4.617	6.824	4.778
RDT&E Articles Quantity				

JCIET field evaluations occur annually. During even-numbered years the field evaluation will be in conjunction with a Joint Task Force Exercise (JTFEX). During odd numbered years the field evaluation will be conducted in support of other Cat 2 training exercises. JCIET addresses four Joint Combat Identification (CID) mission areas: surface-to-surface, air-to-surface, surface-to-air, and air-to-air. These areas require full instrumentation of a battalion sized task force, an opposing force (OPFOR), ground and airborne platforms. Platforms including aircraft, ships at sea and land based assets are 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 is required for instrumentation installation and checkout. OPFOR vehicles and air defense systems will be real Former Soviet Union (FSU) equipment and will be leased and transported from their home base.

	FY 02	FY 03	FY 04	FY 05
JCIET Support	1.200	1.200	1.270	1.343
RDT&E Articles Quantity				

JCIET is a tenant at Eglin AFB and requires base support to include: utilities, cleaning, communications, printing, shipping and vehicles. JCIET maintains and upgrades analytical capabilities with software and hardware improvements. The following major documents are published in preparation for and as a result of Field Evaluations: Evaluation Plan, Spin-Up Plan, BLUFOR and OPFOR Playbooks, National Technical Means Assessment, Redeployment Plan, 45-day Quick Look Report, and the Final Report. Quick Look and Final results briefings are prepared and presented to the Joint Staff, the Services and the Commanders-in-Chief (CINCs).

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603857N - Joint Combat Identification Evaluation Team	X2691 - Joint Combat Identification Evaluation Team (JCIET)

(U) B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Annual Support Contracts	7.140	7.967	8.371	8.797
RDT&E Articles Quantity				

JCIET Field Evaluations are 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 are 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 are also evaluated and analyzed. JCIET's focus is on tactics, techniques and procedures (TTP), interoperability and combat systems. A white force (evaluation control) network is designed and constructed to meet JCIET scenario requirements. A classified network is also designed and constructed to allow participants at different geographical locations to conduct and debrief the daily missions. This debriefing process allows participants the opportunity to discover, learn, and adjust TTP and systems performance for the subsequent mission.

	FY 02	FY 03	FY 04	FY 05
Conferences	0.300	0.300	0.300	0.300
RDT&E Articles Quantity				

JCIET hosts or attends planning conferences to include Airspace, OPFOR, Initial Planning, Mid-Planning and Final Planning. Warfighter participants are an integral part of the planning process including scenario development and preparation for interoperability between the services. Site visits required to prepare for field evaluations will be conducted as necessary. The JCIET staff also provides 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 USJFCOM Joint Interoperability Integration (JI&I) objectives as directed by DCINC to include level II training events and exercises.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: FEBRUARY 2003
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603857N - Joint Combat Identification Evaluation Team	X2691 - Joint Combat Identification Evaluation Team (JCIET)

(U) C. PROGRAM CHANGE SUMMARY:

(U) Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget	13.530	14.414	0.000	0.000
Current President's Budget	12.994	14.084	16.765	15.218
Total Adjustments	-0.536	-0.330	0.000	0.000
Summary of Adjustments				
Sec. 8123: Management Reform Initiative	-0.12			
SBIR Assessment	-0.351			
Sec. 313, PL 107-208: Revised Econ Assumption	-0.029			
Sec. 8100 Business Process Reform		-0.058		
Sec. 8135 Economic Assumptions	-0.036	-0.081		
Sec. 8109 IT Cost Growth		-0.026		
Sec. 8029, P.L. 107-248 FY03 FFRDC reduction		-0.012		
Miscellaneous Department Adjustments		-0.153		
Subtotal	-0.536	-0.330	0.000	0.000

(U) Schedule:

Not Applicable

(U) Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification		DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603857N - Joint Combat Identification Evaluation Team	X2691 - Joint Combat Identification Evaluation Team (JCIET)

(U) D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
Not Applicable										

(U) E. ACQUISITION STRATEGY: *

FY 2002–05. Five-year sole-source (one-year basic with four one-year options) contracts were awarded to SAIC and MEVATEC, on 1 April 2002; first year option is schedule for award on 1 April 2003 for both contracts. Currently working with several DoD agencies to provide instrumentation and data collection support. A three-year sole source (one-year basic with two one-year options) contract is schedule for January 2003 award with Applied Data Trends, Inc. (ADTi), to provide computer-generated graphic display support. A one-year competitive contract was awarded to Northrop Grumman in December 2002 to provide video teleconferencing technical support. JCIET will continue to utilize competitive and sole-source contract procedures, to include looking at Government agencies, to determine the best vendor to meet JCIET requirements, at the best value.

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

CLASSIFICATION:

Exhibit R-3, Project Cost Analysis								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603857N - Joint Combat Identification Evaluation Team			PROJECT NUMBER AND NAME X2691 - Joint Combat Identification Evaluation Team (JCIET)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Aircraft Integration											0.000	
Ship Integration											0.000	
Ship Suitability											0.000	
Systems Engineering											0.000	
Training Development											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Development Support											0.000	
Software Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
Studies & Analyses											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

CLASSIFICATION:

Exhibit R-3, Project Cost Analysis								DATE: **FEBRUARY 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603857N - Joint Combat Identification Evaluation Team			PROJECT NUMBER AND NAME X2691 - Joint Combat Identification Evaluation Team (JCIET)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation	SS/T&M	SAIC - Eglin AFB	13.676	5.401	04/03	5.483	04/04	5.589	04/05	Continuing	Continuing	Continuing
Developmental Test & Evaluation	MIPR	Various	2.857	1.000	Various	1.000	Various	1.000	Various	Continuing	Continuing	Continuing
Operational Test & Evaluation	SS/T&M	MEVATEC - Eglin AFB	6.328	2.566	04/03	2.888	04/04	3.208	04/05	Continuing	Continuing	Continuing
Evaluation Other Costs	MIPR	Various	10.806	3.617	Various	5.824	Various	3.778	Various	Continuing	Continuing	Continuing
Travel and Conference	MIPR	JCIET/Various	2.135	0.300	Various	0.300	Various	0.300	Various	Continuing	Continuing	Continuing
Operation Costs/Research	MIPR	JCIET/Various	3.744	1.200	Various	1.270	Various	1.343	Various	Continuing	Continuing	Continuing
											0.000	
Subtotal T&E			39.546	14.084		16.765		15.218		Continuing	Continuing	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Total Cost			39.546	14.084		16.765		15.218		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 81

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																																DATE: **FEBRUARY 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /** **BA-4**									PROGRAM ELEMENT NUMBER AND NAME 0603857N - Joint Combat Identification Evaluation Team												PROJECT NUMBER AND NAME X2691 - Joint Combat Identification Evaluation Team (JCIET)												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Field Evaluations (stand-alone, JTFEX or other Cat 2 event)			★	★			☆				☆				☆					☆			☆			TBD				TBD		
Planning	■	■	■	■	■	■	□		□	□	□	□	□	□	□	□	□	□	□	□		□	□									
Publications Milestones	▲	▲	▲	▲	▲	▲	▲	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△

* Note required for Budget Acitivities 1, 2, 3, and 6.

R-1 Shopping List - Item No. 81

CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **FEBRUARY 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-4**	PROGRAM ELEMENT 0603857N - Joint Combat Identification Evaluation Team				PROJECT NUMBER AND NAME X2691 - Joint Combat Identification Evaluation Team (JCIET)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Field Evaluations (stand-alone, JTFEX or other Cat 2 event)	Stand Alone and Cat 2	Cat 2	JTFEX	Cat 2	JTFEX	Cat 2	TBD	TBD
Planning (Initial, Mid, Final, OPFOR and Airspace	1Q-2Q,4Q	1Q-2Q,4Q	1Q-2Q,4Q	1Q-2Q,4Q	1Q-2Q,4Q	1Q-2Q		
Publications (Evaluation Plan, Spin-up Plan, OPFOR&BLUFOR Playbooks, Nat'l Technical Means Assessment, Redeployment Plan, 45-day Quick Look, Final	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Spin-up, Evaluation, and Re-deployment	3Q-4Q	3Q-4Q	3Q	3Q	2Q-3Q	3Q		

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603860N, Joint Precision Approach and Landing System			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**5.452**	**11.668**	**24.304**	**38.989**	**29.725**	**25.438**	**20.939**	**21.337**
W2329 JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)	*** **5.452**	**11.668**	**24.304**	**38.989**	**29.725**	**25.438**	**20.939**	**21.337**

* FY 02 funds were executed under Program Element 0603216N, Project W9035.

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 Global Positioning System GPS user equipment which will support the high accuracy, integrity, availability, and continuity needed for JPALS to work in a shipboard environment. These will include Shipboard Relative GPS (SRGPS) and Embedded GPS/Inertial Navigation System (EGI) components.

(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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
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)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	* **5.452**	**11.668**	**24.304**	**38.989**	**29.725**	**25.438**	**20.939**	**21.337**
RDT&E Articles Qty			**6**	**16**				**16**

* FY 02 funds were executed under P.E. 0603216N, Project W9035.

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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603860N, Joint Precision Approach and Landing Systen	W2329, Joint Precision Approach and Landing System

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	5.452	11.668	24.304	38.989
RDT&E Articles Quantity	0	0	6	16

Continued SRGPS and avionics architecture development (under related RDT&EN PE 0603216N) in FY02 and continue through FY03, completing in FY04.
Begin development of GPS and data link subsystems (including anti-jam capability) in FY03 and continue through FY05. Commence prototyping effort on EGI subsystem in FY03 and continue development through FY05. Begin development of digital GPS receiver card in FY04. Begin SRGPS and avionics System Engineering in FY05.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 82

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603860N, Joint Precision Approach and Landing System	W2329, Joint Precision Approach and Landing System

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget:	1.500	11.932	30.645	41.500
FY 2004-2005 President's Budget	5.452	11.668	24.304	38.989
Total Adjustments	3.952	-0.264	-6.341	-2.511
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions	-0.028	-0.070		
Congressional rescissions	-0.003			
SBIR/STTR transfer	-0.020			
Economic assumptions	-0.015	-0.194	-0.647	-0.936
Reprogrammings	4.018			
Sponsor/FMB/NAVAIR adjustments			-5.694	-1.575
Other Navy/OSD adjustments				
Congressional increases				
Subtotal	3.952	-0.264	-6.341	-2.511

Schedule:

Milestones that have accelerated are due to the need to deliver to the Joint Strike Fighter (JSF) program as a forward fit avionics package. Requirement to perform anti-jam testing on SH-60 has been eliminated by a restructured program plan which accommodates funding shortfalls.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603860N, Joint Precision Approach and Landing System	W2329, Joint Precision Approach and Landing System

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
PE 0603216N Aviation Survivability	5.452									

E. 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 procurred. Shore based JPALS units will be developed by the Air Force to meet the requirements of all the Services.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603860N, Joint Precision Approach and Landing System			PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hdw Develop - SRGPS	WR	NAWCAD, Pax River, MD	4.125	3.581	11/02	2.519	11/03				10.225	
Primary Hdw Develop - SRGPS 1	SS/CR	EMA Lexington Park, MD		1.600	12/02	2.800	12/03				4.400	4.400
Primary Hdw Develop - SRGPS 2	C/CR	ARINC, California, MD	2.600	3.475	12/02	9.617	12/03				15.692	15.692
Primary Hdw Develop - SRGPS	SS/CR	Honeywell, Clearwater, FL		0.900	12/02	1.100	12/03	3.283	12/04	2.500	7.783	7.783
Primary Hdw Develop - SRGPS	SS/CR	TISI, Bloomington IL				0.700	12/03				0.700	0.700
Primary Hdw Develop - SRGPS	C/CR	Various - TBD						27.241	12/04	205.281	232.522	
Primary Hdw Develop - Anti-jam	C/CR	TBD		0.800	12/02	3.958	12/03				4.758	
Systems Engineering	WR	NAWCAD, Pax River, MD						5.435	11/04	125.935	131.370	
Ship Integration	WR	NAWCAD, Pax River, MD	1.414	0.849	11/02	3.142	11/03	2.534	11/04	152.526	160.465	
Aircraft Integration	C/CR	Various - TBD								269.819	269.819	
Subtotal Product Development			8.139	11.205		23.836		38.493		756.061	837.734	

Remarks: 1 Subcontractor: Sierra Nevada Corp. Sparks, NV & Salt Lake City, UT
2 Subcontractor: Rockwell Collins Cedar Rapids, IA

Development Support												
Software Development												
Integrated Logistics Support	WR	NAWCAD - Pax River, MD		0.075	11/02	0.075	11/03	0.075	11/04	0.525	0.750	
Configuration Management												
Technical Data												
Studies & Analyses	WR	NAWCAD - Pax River, MD		0.180	11/02	0.182	11/03	0.183	11/04	0.671	1.216	
GFE												
Award Fees												
Subtotal Support			0.000	0.255		0.257		0.258		1.196	1.966	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603860N, Joint Precision Approach and Landing System			PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD - Pax River, MD								18.000	18.000	
Operational Test & Evaluation	WR	NAWCAD - Pax River, MD								9.000	9.000	
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		27.000	27.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	Various	NAWCAD & NSWC	0.060	0.158	11/02	0.161	11/03	0.163	11/04	1.835	2.377	
Travel	WR	NAWCAD - Pax River, MD	0.010	0.050	11/02	0.050	11/03	0.075	11/04	0.500	0.685	
Transportation												
SBIR Assessment			0.020								0.020	
Subtotal Management			0.090	0.208		0.211		0.238		2.335	3.082	
Remarks:												
Total Cost			8.229	11.668		24.304		38.989		786.592	869.782	
Remarks:												

R-1 SHOPPING LIST - Item No. 82

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2003**

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

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones													MS B																MS C			
SRGPS System Development					SRGPS ARCHITECTURE									SRGPS ENGINEERING																			
Contract Award/Event	CAD													SDD																			
Test & Evaluation Milestones																																
Operational Test																					INTEGRATION		DT-I		DT-II			OA				
Production Milestones LRIP FY 09																													LRIP Start			
Deliveries (Start in 2010)																																

R-1 SHOPPING LIST - Item No. 82

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603860N, Joint Precision Approach and Landing System				PROJECT NUMBER AND NAME W2329, Joint Precision Approach and Landing System			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)								
Milestone II (MSII)				1Q				
Contract Preparation			4Q	1Q				
Software Specification Review (SSR)								
Preliminary Design Review (PDR)								
System Development				1-4Q	1-4Q			
Critical Design Review (CDR)								
Quality Design and Build								
Test Readiness Review (TRR)						3Q		
Developmental Testing (DT-IIA)							2-4Q	
Eng Dev Model (EDM) Radar Delivery - Lab								
Software Delivery 1XXSW								
Preproduction Readiness Review (PRR)								
EDM Radar Delivery - Flt Related								
Milestone C (MS C)								1Q
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								1Q
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 82

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE **0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**
Project S3031/Single Int. Air Picture (SIAP)	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**

PE transferred from SIAP System Engineering Task Force to the Navy starting in FY2004

A. (U) Mission Description and Budget Item Justification

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 SIAP. 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 (A&T) to perform "the system engineering needed to fix problems in the existing Joint Data Network (JDN) and to guide development toward a future SIAP capability." This PE is funded by all the services and controlled by the SIAP Acquisition Executive. **Starting in FY2004 joint SIAP funding will transition to a US Army PE and related documentation will be provided through the US Army.**

This Joint engineering organization will develop tools/processes and perform system engineering that will identify cost effective fixes to US/coalition tactical data link systems. The resulting fixes will be addressed in incremental blocks designed to improve the SIAP. Each block will identify specific changes to be implemented in tactical systems to improve out integrated air and missile defense/theater air warfare capabilities. These blocks will identify the engineering specifications, supporting rationale (test results and analysis), and acquisition estimates expected to implement the changes. Once implemented by the Services, these improvements will reduce the risk of fratricide to US/coalition forces as well as allow our combatant commanders to exploit the full kinematic range of our weapons through better Joint Force integration.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **0603879N SINGLE INT. AIR PICTURE (SIAP) SYS ENG**				PROJECT NUMBER AND NAME Project S3031/Single Int. Air Picture (SIAP)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**41.381**	**71.952**	**15.053**	**7.831**	**0.784**	**0.784**	**0.881**	**0.881**
RDT&E Articles Qty	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Single Integrated Air Picture (SIAP) System Engineering (SE) Task Force (TF) is charged with implementing a disciplined systems engineering process to identify and recommend the most effective and efficient means to achieve a SIAP capability that satisfies warfighter needs. The product of the SIAP SE recommendations will be combat-ready, operationally certified equipment and computer programs that enable the warfighter to build and maintain a SIAP, as well as inputs to tactics, techniques, and procedures (TTP) necessary to operate the components of the integrated system.

• Block 0 addressed four joint warfighting shortfalls selected for their impact on the Joint Data Network (JDN), their applicability across the Services, and the engineering maturity reflected by interface change proposals already on-record. The Block 0 fixes addressed were: improved correlelation/decorrelation, formation tracking/correlation, identification taxonomy and symbology, and an identification (ID) conflict resolution matrix. The effect of these fixes will reduce operator confusion and lay the groundwork for subsequent JDN improvements.

• Block 1 is addressing a set of JDN deficiencies approved by United States Joint Forces Command to provide warfighter benefits which can be implemented in the near- to mid-term. The issues being addressed are: further reduction of dual tracks, improved combat ID capability, improved data sharing (network capacity), and improved air picture for theater ballistic missile defense performance.

Beginning in FY04 this project develops, designs, and tests Navy engineering changes for SIAP System Engineering Task Force Block upgrades in response to Joint Requirements Oversight Council (JROC) validated requirements. SIAP capability is being introduced through a series of Block improvements targeted at eliminating specific interoperability issues, providing C4I enhancements, and delivering an executable integrated architecture. Funding for planned systems upgrades (E-2C/CEC, AEGIS and Ship Self Defense System (SSDS).

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
SIAP System Engineering Task Force	41.381	0.000	0.000	0.000

(**U) FY2002 Accomplishments:**
The SIAP System Engineer laid the groundwork for developing engineering concepts needed to support improved integration of tactical combat systems through enhancements to the Joint Data Network and Joint Air & Missile Defense Integrated Architecture. Two key engineering products produced in FY 02 were our SIAP metrics that gave the Joint community standardized ways to measure the completeness, continuity, and accuracy of the air picture, and our first Common Reference Scenario that gave the Joint Community a set of standardized conditions to use in models and simulations.

Additional accomplishments and actions include:
-Block 0 Follow-up, included coordination with Services on Block 0 implementation plans and completing deferred work on Formation Tracking.
-Continued developement of 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 analysis and rationale, and acquisition estimates/costs. Engineering will start in FY02 but is not expected to complete until FY03.
- Developed prototype Capability and Limitations Document, May 02. This prototype gave joint commanders an initial concept for describing the capabilities and limitations of the Joint Theater Air and Missile Defense Family of Systems (JTAMD FoS).
- Developed System Engineering Management Plan, Apr 02. The SEMP provides a uniform framework for controlling all SIAP products.
- SIAP Architecture: Development continues in FY 02, with a scheduled delivery of Dec 02. The Architecture 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.
- SIAP Component of the Theater Air Missile Defense 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.
- SIAP Roadmap: Development continues in FY 02 with a scheduled initial delivery in Dec 02. The SIAP Roadmap defines block upgrades to satisfy operational requirements leading to the objective SIAP capability.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA 4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
SIAP System Engineering Task Force	0.000	71.952	0.000	0.000

(U) FY2003 PLAN:

Continue developing Joint Data Network enhancements to improve the JTAMD FoS SIAP performance and continue to develop engineering concepts needed to support the Integrated Architecture. Specific products will include a recommended list of Block 1 improvements which will be presented to the JROC in the 1st Qtr of FY03, with the engineering specifications completed in 4th Qtr FY 03 . We will also 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.

BLOCK 0: Monitor implementation of Block 0 fixes in Service systems. Conduct technical design reviews with 13 core affected weapon systems implementing Block 0 fixes.

BLOCK 1: Complete engineering of Block 1 SIAP improvements affecting 30-50 programs across DoD. Establish technical configuration management of JROC approved solutions for Joint and NATO application.

BLOCK 2: Initiate definition of Block 2. Begin the process of translating 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.

ARCHITECTURE: Continue development of the SIAP component of the JTAMD Integrated Architecture. Coordinate the matching of Block 1 solutions and Block 2 issues 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.

Systems Engineering Tools and Analysis: Develop analysis tools/techniques 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. Analyze and synchronize candidate solutions with respect to individual Services and weapon systems. Plot predicted and fielded Joint Tactical Data Link performance capabilities timelines.

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).

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 / construction and contract office support.

Starting in FY2004 the Joint Siap Task Force will be funded in a US Army PE and the Navy SIAP Upgrade program is being realigned to this PE.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 4**	PROGRAM ELEMENT NUMBER AND NAME **0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	PROJECT NUMBER AND NAME **Project S3031/Single Int. Air Picture (SIAP)**

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Navy Block Upgrade Implementation	0.000	0.000	15.053	7.831

(U) FY2004 PLAN:
Begins development of a SIAP reference implementation through the development of a “platform” independent behavior model and follow-on “platform” specific performance model in a digital computing environment. Navy Program Office engineering is required to assure common development of highly reusable software to accomplish the functionality required for each issue (e.g., data registration), and its integration with the functionality required for each system. FY 03 work is to design reference algorithms for priority core command and control systems: AEGIS, SSDS and E-2C/CEC.

(U) FY2005 PLAN:
Completes Block 1 design phase of the reference algorithms for the priority core command and control systems and initiates the code, debug and software testing phase in a simulation/stimulation environment.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	**0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	**Project S3031/Single Int. Air Picture (SIAP)**

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	42.727	73.966	0.000	0.000
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	41.381	71.952	15.053	7.831
Total Adjustments	-1.346	-2.014	15.053	7.831
Summary of Adjustments				
C3-SIAP	0.000	0.000	15.400	8.000
Congressional program reductions	0.000	0.000	0.000	0.000
Congressional undistributed reductions	-0.472	-0.818	0.000	0.000
Congressional rescissions	0.000	0.000	0.000	0.000
SBIR/STTR Transfer	-1.140	0.000	0.000	0.000
Economic Assumtions	-0.115	-1.196	-0.347	-0.169
Reprogrammings	0.381	0.000	0.000	0.000
Congressional increases	0.000	0.000	0.000	0.000
Subtotal	-1.346	-2.014	15.053	7.831

Schedule: See Atached R4.

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME **0603879N SINGLE INT AIR PICTURE (SIAP) SYS ENG**	PROJECT NUMBER AND NAME **Project S3031/Single Int. Air Picture (SIAP)**

D. OTHER PROGRAM FUNDING SUMMARY: Block 1

Line Item No. & Name
PE 0603582N Combat Systems Integration
PE 0604307N Surface Combatant Combat System Imp.
PE 0604755N Quick Reaction Combat Capability
PE 0603658N Cooperative Engagement Capability

E. ACQUISITION STRATEGY: Not Applicable

F. MAJOR PERFORMERS:

Naval Surface Warfare Center, Dahlgren VA - Surface Combatant System Engineering and Computer Integration
Naval Air Warfare Center Aircraft Division, Patuxent River MD - Aircraft Platform Integration and System Engineering
Space and Warfare Systems Command, San Diego CA - System Communication

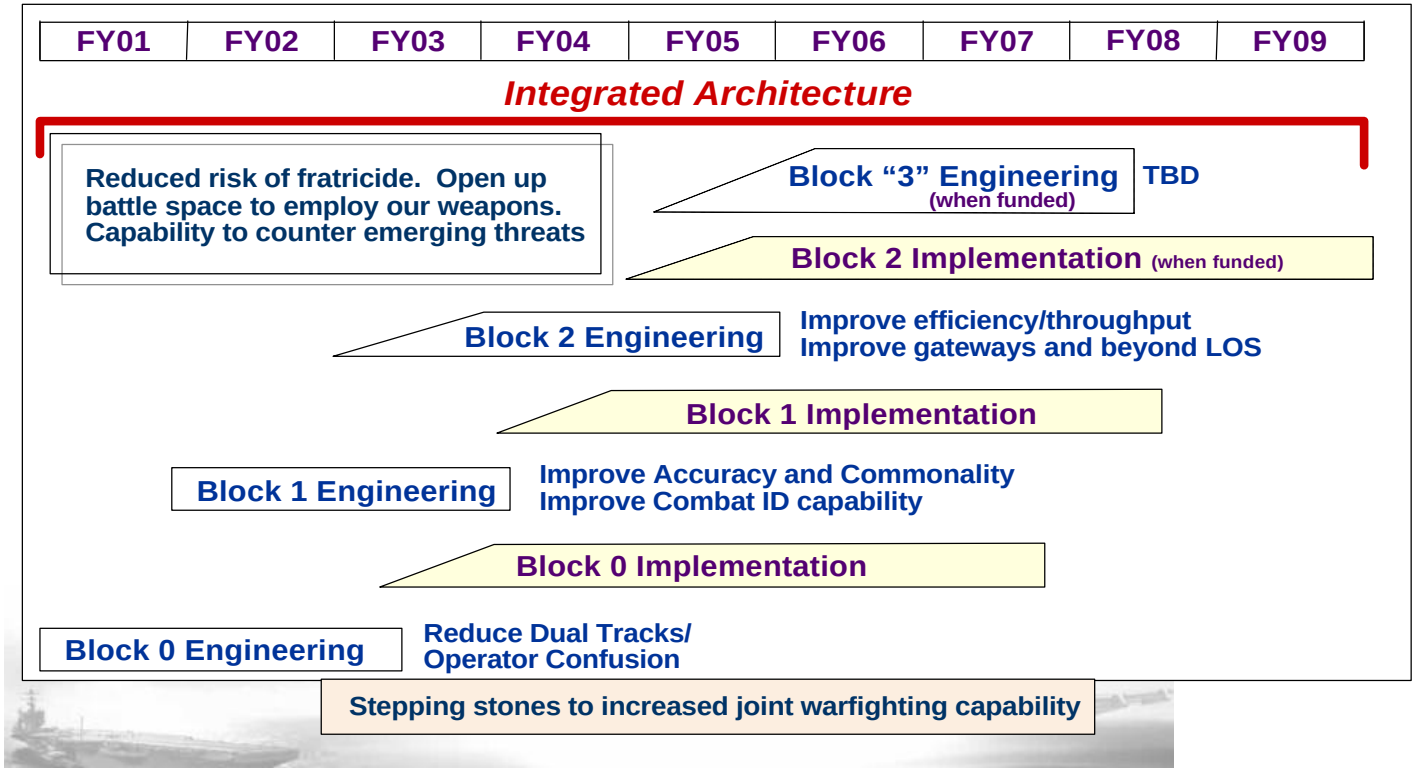
R-1 SHOPPING LIST - Item No. 83

Exhibit R-3 Cost Analysis (page 1)											DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**			PROGRAM ELEMENT **0603879N**			PROJECT NAME AND NUMBER 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 03 Cost**	FY 03 Award Date	**FY 04 Cost**	FY 04 Award Date	**FY 05 Cost**	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Block 0	MIPR	Army PEO/AMD, Huntsville AL	0.838	0.041	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	1.086	0.043		0.000		0.000		0.000	0.000	
	MIPR	Air Force ESC, Boston MA	1.283	0.046		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0.601	0.020		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	4.268	1.050		0.000		0.000		0.000	0.000	
Subtotal Block 0			8.075	1.200		0.000		0.000				
Block 1	MIPR	Army PEO/AMD, Huntsville AL	8.707	6.633	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	9.180	6.905		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	9.866	7.248		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	4.256	2.789		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	8.208	12.491		0.000		0.000		0.000	0.000	
	WX	NAVAIR, Pax River MD	0.000	0.000		4.516		2.349		CONT.	CONT.	
	WX	NSWC, Dahlgren VA	0.000	0.000		4.365		2.271		CONT.	CONT.	
	FAD	APL, Laurel MD	0.000	0.000		0.903		0.470		CONT.	CONT.	
	PD	SPAWAR, San Diego CA	0.000	0.000		2.559		1.331		CONT.	CONT.	
	VAR	Contract Supt, Various	0.000	0.000		2.710		1.410		CONT.	CONT.	
Subtotal Block 1			40.216	36.066		15.053		7.831		0.000	0.000	
Block 2	MIPR	Army PEO/AMD, Huntsville AL	0	2.060	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	0	2.266		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	2.369		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	1.030		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	2.275		0.000		0.000		0.000	0.000	
Subtotal Block 2				10.000		0.000		0.000				
Architecture	MIPR	Army PEO/AMD, Huntsville AL	0	1.536	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
	MIPR	Navy PEO/TSC, Arlington VA	0	1.625		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	1.684		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	0.786		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	2.369		0.000		0.000		0.000	0.000	
Subtotal Architecture				8.000		0.000		0.000				
System Engineering	MIPR	Army PEO/AMD, Huntsville AL	0	0.988	VAR	0.000	VAR	0.000	VAR	0.000	0.000	
Tools & Analysis	MIPR	Navy PEO/TSC, Arlington VA	0	0.876		0.000		0.000		0.000	0.000	
	MIPR	AF ESC/DI, Boston MA	0	1.206		0.000		0.000		0.000	0.000	
	MIPR	Marine MARCOR, Quantico VA	0	0.520		0.000		0.000		0.000	0.000	
	VAR	Contract Supt, Various	0	1.196		0.000		0.000		0.000	0.000	
Subtotal SE Tools & Analysis				4.786		0.000		0.000				
Validation and Certification	WR	Navy DEP/JDEP, NSWC-DD, Dahlgren VA	0	7.000		0.000		0.000				
TOTAL			48.291	67.052		15.053		7.831				
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 2)										DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-4**			PROGRAM ELE **0603879N**	PROJECT NAME AND NUMBER 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 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation													
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			0.975	1.900									
Travel			0.180	0.100									
Labor (Research Personnel)													
Rent/Const/Utilities/Computers				2.900									
Subtotal Management			1.155	4.900		0.000		0.000		0.000			
Remarks:													
Total Cost			49.446	71.952		15.053		7.831					
Remarks:													

R-1 SHOPPING LIST - Item No. 83

EXHIBIT R4, Schedule Profile		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY **RDT&E,N/BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603879N SINGLE INTEGRATED AIR PICTURE (SIAP) SYS ENG	PROJECT NUMBER AND NAME Project S3031/Single Int. Air Picture (SIAP)



FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604272N
PROGRAM ELEMENT TITLE: TADIRCM

Congressional Plus-Ups:

	FY 02	FY 03
2 Color Focal Plane Array	4,143	N/A

This effort developed and evaluated manufacturing techniques to reduce the cost and enhance the availability of two color midwave staring infrared focal plane arrays for missile warning. Focal plane arrays were delivered for performance evaluation against system specifications, and integration into prototype sensors. The technical scope of the work included infrared detector material growth, preparation, and screening technique enhancements, infrared detector device processing techniques, focal plane fabrication processes, and focal plane array testing.

CLASSIFICATION:

EXHIBIT R-2, RDT&E	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE **PE 0604327N Hardened Target Munitions**

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**0.0**	**0.0**	**0.0**	**9.8**	**9.8**	**10.8**	**0.0**	**0.0**
Project J2331 Hardened Target Munitions				9.8	9.8	10.8		

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

The three-year Submarine Encapsulated Launch Demonstration (SELD) of the Army's Advanced Tactical Missile System (ATACMS) missile from a Ship, Submersible, Guided Nuclear (SSGN) will demonstrate the capability for SSGN to Suppress Enemy Air Defenses (SEAD), neutralize Hardened Deeply Buried Targets (HDBT) and swiftly deal with Time Critical Targets (TCT) operating alone and in joint forces operations. This demonstration will show the flexibility that encapsulated launch systems will provide to the current SSGN-Tomahawk (TLAM) baseline by allowing for various weapon mixes; and thus, expanding and enhancing the SSGN mission capabilities.

This will be a three-year program to develop the system concept and architecture for encapsulated launch of the ATACMS payload and to integrate the technology into full-scale ATACMS missile (or Boost Test Vehicles (BTV)) launches from an SSBN that is in the process of SSGN conversion. The demonstration effort will include the design of a demonstration capsule, a "module" that will support the encapsulated missile within the launch tube, and missile/capsule/module integration. Ground tests of the encapsulated ATACMS will be performed in FY 2006, followed by the underwater launch of encapsulated ATACMS BTV in FY 2007.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE **PE 0604327N- Demonstration and Validation**

B. (U) Program Change Summary:

	FY 2002	FY 2003	FY 2004	FY2005
Previous President's Budget: (FY 2003 President's controls)	0	0	0	0
Current President's Budget: (FY 2004 Presidents controls)	0	0	0	9.8
Total Adjustments:	0	0	0	9.8
Summary of Adjustments:				
Nuclear Posture Review – Strategic Systems				10.0
Economic Assumptions				-0.2

C. (U) Other Program Funding Summary: See enclosed R-2a for each individual project data.

D. (U) Acquisition Strategy: See enclosed R-2a for each individual project data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	PROJECT NUMBER AND NAME **Hardened Target Munitions J2331**

COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost J2331 Hardened Target Munitions	**0.0**	**0.0**	**0.0**	**9.8**	**9.8**	**10.8**	**0.0**	**0.0**
RDT&E Articles Qty								

C. (U) MISSION DESCRIPTION AND BUDGET PROJECT JUSTIFICATION:

The three-year Submarine Encapsulated Launch Demonstration (SELD) of the Army's Advanced Tactical Missile System (ATACMS) missile from a Ship, Submersible, Guided Nuclear (SSGN) will demonstrate the capability for SSGN to Suppress Enemy Air Defenses (SEAD), neutralize Hardened Deeply Buried Targets (HDBT) and swiftly deal with Time Critical Targets (TCT) operating alone and in joint forces operations. This demonstration will show the flexibility that encapsulated launch systems will provide to the current SSGN-Tomahawk (TLAM) baseline by allowing for various weapon mixes; and thus, expanding and enhancing the SSGN mission capabilities.

This will be a three-year program to develop the system concept and architecture for encapsulated launch of the ATACMS payload and to integrate the technology into two full-scale ATACMS (or Boost Test Vehicles (BTV)) launches from an SSBN that is in the process of SSGN conversion. The demonstration effort will include the design of a demonstration capsule, a "module" that will support the encapsulated missile within the launch tube, and missile/capsule/module integration. Ground tests of the encapsulated ATACMS will be performed in FY 2006, followed by the underwater launch of encapsulated ATACMS BTV in FY 2007.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	PROJECT NUMBER AND NAME **Hardened Target Munitions J2331**

B. (U) Accomplishments/Planned Program

	FY 2002	FY 2003	FY 2004	FY 2005
Submarine Encapsulated Launch Demo				9.8
RDT&E Articles Quantity				

(U) FY 2002 PLAN N/A

(U) FY 2003 PLAN N/A

(U) FY 2004 PLAN N/A

(U) FY 2005 PLAN N/A

- (U) ($9.8) Initiate Submarine Encapsulated Launch Demonstration efforts.
  FY 2005 efforts include:
  - (U) Initiate and complete capsule design development concept
  - (U) Initiate and complete Launch Environment Hydro/CFD analysis
  - (U) Initiate Capsule Test Module development design
  - (U) Initiate Missile/Capsule/Module design integration
  - (U) Identify GFE/GFI and Long Lead material needs
  - (U) Finalize Program Plans and Demo Test requirements
  - (U) Initiate cycle for Navy's technical DEMO test processes approvals

C. (U) Other Program Funding Summary: (Dollars in Thousands)

FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Total Complete	Total Cost
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

D. (U) Acquisition Strategy: TBD

E. (U) Major Performers:
TBD

CLASSIFICATION:

Exhibit R-3 Cost Analysis		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N BA-4**	PROGRAM ELEMENT **PE 0604327N Demonstration and Validation**	PROJECT NUMBER AND NAME **Hardened Target Munitions J2331**

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Ancillary Hardware Development	TBD*	TBD*	N/A					9.8	10/04	Cont.	Cont.	TBD
Subtotal Product Development								9.8				

Remarks: * The contractor(s) for this effort have not been identified. The contract vehicle will be multi-year with incentives (Incentive Fee/Award Fee) options. Specifics will be identified as part of the acquisition process and contractor selection.

Total Cost			0.0	0.0		0.0		9.8		Cont.	Cont.	

Remarks:

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R2357 Maritime Battle Center	20,845	19,559	19,712	14,888	15,298	18,457	18,790	19,129
R2630 Navy Collaborative Integrated IT	1,345							
X0798 OTH Targeting	1,999	1,627	1,591	1,728	1,627	1,996	2,034	2,071
X2144 SEW Engineering	8,686	9,717	10,066	9,750	11,478	12,497	12,732	12,971
X9054 IT-21 Block 1 C4ISR Computing Equipment Upgrade	5,789	1,662						
Total	38,664	32,565	31,369	26,366	28,403	32,950	33,556	34,171

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) contains three projects: Maritime Battle Center (MBC), Over-the-Horizon Targeting (OTH-T), and Space and Electronic Warfare (SEW) Engineering. The projects are systems engineering non-acquisition programs with the objectives of developing, testing, and validating Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures to support naval missions in Joint and Coalition Theater. The mission of this PE is carried out by multiple tasks that are used to ensure Naval C4ISR Command and Control Warfare (C2W) components of SEW are effectively integrated into 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 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. The MBC will also act as the Navy representative to the Joint Battle Center and the Battle Labs of other services.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support

B. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget Submission:	39,273	31,623	34,915	33,062
Adjustments from FY 2003 President's Budget:				
FY 2002 SBIR	-431			
Post-Production R&D Continuation			-4,010	-4,673
Non-S&T R&D Offsets			-3,254	-544
Cong. Rescissions/Adjustments/Undist. Reductions	-195	-405		
Execution Adjustment	17			
NWCF Adjustment			1	32
Efficiencies at NWCF Activities			-154	-165
Pay Raise/Inflation Adjustments		-353	-724	-568
NWDC Sea Warrior Increase			5,400	
Reduction in Investment in Navy			-788	-761
Contractor Support Services			-17	-17
Congressional Plus Up		1,700		
FY 2004/2005 President's Budget Submission:	38,664	32,565	31,369	26,366

PROGRAM CHANGE SUMMARY EXPLANATION:

Schedule: Not applicable
Technical: Not applicable

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: R2357
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: Maritime Battle Center

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
R2357 Maritime Battle Center	20,845	19,559	19,712	14,888	15,298	18,457	18,790	19,129

A. 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.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
FBE Analysis and Core Support	20,845	19,559	19,712	14,888

FY 2002 ACCOMPLISHMENTS:

- Executed Fleet Battle Experiment Juliet (FBE J) in conjunction with U.S. Joint Forces Command's (JFCOM) Millennium Challenge 02 (MC02). Integrated efforts of the CINCLANTFLT CINCPACFLT (CLF)/(CPF) Naval Afloat Targeting Integrated Process Team, OPNAV's Mission Capability Packages, ONR’s Future Naval Capabilities and related issues from the USN-USAF Warfighter talks. Sponsored two Joint Initiatives: Joint Fires Initiative (JFI) and the Joint High Speed Vessel. JFI proved fundamental to MC02 Joint Time Critical Targeting concept of operations and was subsequently elevated by JFCOM to a "key" initiative, indicating the critical nature of the architecture to the success of MC02. JFI also incorporated the Naval Fires Network and spearheaded the rapid prototyping and Navy acquisition of this important developing system.

- The following Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) packages will be developed by NWDC after FBE J/MC02:
  - Joint Packages: Joint Fires Initiative and Joint High Speed Vessel
  - Navy Packages: Joint Force Maritime Component Commander (JFMCC) and Naval Fires Network
- Other NWDC post FBE J/MC02 Deliverables:
  - FBE J Quicklook Message, FBE J Final Report, Mine Warfare Concept of Operations (CONOPS) and Doctrine input, SSGN CONOPS, Joint C2 for Navy Theater Air and Missile Defense.
- Executed an extremely aggressive series of Limited Objective Experiments (LOEs) for the High Speed Vessel Project (HSV) that included Joint Venture (HSV X1), HMNS Skjold, a prototype Norweigan Navy littoral combatant, and Sea Slice a corporate, commercial experimentation vessel.
- Executed two Mine Warfare LOEs that integrated the High Speed Vessel with the Very Shallow Water Unmanned Underwater Vehicle

FY 2003 PLANS:

- FBE Kilo to be held in April/May 2003 with Commander Seventh Fleet in conjunction with Tandem Thrust 03. FBE Kilo will expand on FBE J and explore:
  - Naval Fires Network
  - Area Air Defense Commander Tools
  - Information Operations
  - Joint Fires
  - Undersea and Antisubmarine Warfare (USW/ASW)
- Executing the Sea Trial Process in support of Commander Fleet Forces Command.
- Lease extension of the High Speed Vessel to continue experimentation in the areas Joint Logistics Over-The-Shore Roll-on/Roll-off Discharge Facility (JLOTS/RRDF) compatibility operations, NEO/HA operations, underway replenishment, SEARAM, seakeeping, maneuvering trials, unmanned vehicle recovery, RMS launch and recovery, module concept testing.
- Modifications to the High Speed Vessel
- Participation in JFCOMs Pinnacle Impact 03

FY 2004 PLANS:

- Support Fleet Battle Experiment Lima.
- Participate in JFCOMs Pinnacle Vision 04
- Conduct Limited Objective Experiments

- Sea Warrior is the process of developing 21st century Sailors. It identifies the knowledge, skills, and abilities needed for mission accomplishment.

FY 2005 PLANS:

- Support Fleet Battle Experiment Mike.
- Continue the JFCOM experimentation events
- Continue the Limited Objective Experiments

C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: R2357
PROGRAM ELEMENT TITLE:SEW Architecture/Eng Support Project Title: Maritime Battle Center

Exhibit R-3 Cost Analysis (page 1)										Date: FEBRUARY 2003		
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-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	Various	Various	65773	16000	Various	16000	Various	12000		CONT	CONT	CONT
Subtotal T&E			65773	16000		16000		12000		CONT	CONT	CONT
Remarks												
Program Management	Various	Various	14820	3559	Various	3712	Various	2888		CONT	CONT	CONT
Subtotal Management			14820	3559		3712		2888		CONT	CONT	CONT
Remarks												
Total Cost			80593	19559		19712		14888		CONT	CONT	CONT

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
X0798 OTH Targeting	1,999	1,627	1,591	1,728	1,627	1,996	2,034	2,071

A. 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 war fighter 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 COTS (Commercial Off the Shelf) and GOTS (Government Off the Shelf) 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 Command, Control, Communications, Computers and Intelligence (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 and automatic link establishment standards, which will provide for a significant improvement within and between battlegroups.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
BF E-MAIL	232	230	121	133

- Integrate code combination techniques developed during previous fiscal year 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. Beginning in FY03 convert primary transmission protocol to TCP/IP.

	FY 02	FY 03	FY 04	FY 05
Subnet Relay	262	255	121	133

- Exploit and coordinate subnet relay protocols and multi frequency band channels to provide greater data throughput in the HF and ultra high frequency (UHF) Line-of-Sight radio frequency (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.

	FY 02	FY 03	FY 04	FY 05
ALE Development	-	226	238	262

- Exploit Automatic Link Establishment (ALE) standard to support integration and interoperability of multi-level coalition forces to enhance OTH-T capabilities in a Network Centric Warfare environment. Adapt ALE toward future implementation as integral part of Joint Tactical Radio System (JTRS) for allied interoperability.

	FY 02	FY 03	FY 04	FY 05
ALE Issues	-	-	195	210

- Resolve Information Assurance (IA) issues generated by ALE development.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

	FY 02	FY 03	FY 04	FY 05
T&E Tools Development	146	-	-	-

- Based on results of integration testing, the OTH-T program 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 in support of Sea Power 21's objectives.

	FY 02	FY 03	FY 04	FY 05
Systems Integration & Interoperability Testing (LBTN & SIE)	300	424	424	458

- Conduct systems integration and interoperability (Navy and Joint) testing, using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment (SIE). The Reconfigurable Land Based Test Sites (RLBTS) have been expanded to validate IT-21 technologies and architectures prior to shipboard installation in support of FORCENet. Develop test plans and execute integration tests for IT-21 networks to GCCS-M and for other C4ISR systems, participate in Distributed Engineering Plant (DEP) certification testing, by providing GCCS-M nodes and network infrastructure 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.

	FY 02	FY 03	FY 04	FY 05
Interoperability Validation	426	144	144	156

- In FY 2002, 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 it to new and existing users to facilitate Navy and Joint interoperability testing.

- Beginning in FY 2003, will 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 testing using the facilities of the Land Based Test Network (LBTN) and Systems Integration Environment (SIE).

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

	FY 02	FY 03	FY 04	FY 05
Joint Interoperability	394	-	-	-

- Ensured joint interoperability of systems on the NI by enforcing compliance with the Joint Technical Architecture, including Advanced Tomahawk Weapons Control System (ATWCS), Tactical Tomahawk Weapons Control System (TTWCS) and Global Command and Control System-Maritime (GCCS-M). Verified relevance, recommended modifications to, and maintained OTH-T specifications for support and distribution of the Common Operational Picture (COP)to Naval forces. The program's systems engineers input into the SPAWAR advanced technology division to insure critical deficiencies were high priority during investigation of IT-21 systems and architecture. Provided connectivity, conducted integration and interoperability testing, and provided systems engineering expertise for both IT-21 and MIL-STD technologies.

	FY 02	FY 03	FY 04	FY 05
Testing OTH-T Systems	239	348	348	376

- In FY 2002, performed integration and interoperability testing for OTH-T systems in accordance with OPNAV 9410.5A. Performed certification testing for systems undergoing configuration change, developmental testing and or operational testing in accordance with program requirements. Developed 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.

- Beginning in FY 2003, conduct integration testing and certification, in accordance with OPNAVINST 9410.5, of OTH-T and combat systems with tactical data exchanged over Common Operational Picture (COP) Synchronization Tools (CST) 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 for example TTWCS, FLEET essential capabilities and emerging mission essential needs both for new, legacy, and technology refreshed systems.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

C. OTHER PROGRAM FUNDING SUMMARY:

RELATED RDT&E:
SEW Architecture/Engineering Support program element is related to all Naval C4I related efforts.

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X0798
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: OTH Targeting

Exhibit R-3 Cost Analysis												Date: FEBRUARY 03
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/4												PROGRAM ELEMENT 0604707N
			Contract Method & Type									PROJECT NAME AND NUMBER OTH Targeting X0798
Cost Categories	Various	Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management	Various	Various	1468							Cont.	Cont.	Cont.
System Test and Evaluation	Various	Various	3648							Cont.	Cont.	Cont.
Systems Engineering	Various	Various	2047	711	Various	675	Various	738	Various	Cont.	Cont.	Cont.
Interoperability Requirements		Various	3266							Cont.	Cont.	Cont.
T & E Tools Development	Various	Various	429							Cont.	Cont.	Cont.
Systems Integration & Interoperability Testing (LBTN & SIE)	Various	Various	880	424	Various	424	Various	458	Various	Cont.	Cont.	Cont.
Interoperability Validation	Various	Various	1332	144	Various	144	Various	156	Various	Cont.	Cont.	Cont.
Joint Interoperability	Various	Various	1163							Cont.	Cont.	Cont.
Testing OTH-T Systems		Various	634	348	Various	348	Various	376	Various	Cont.	Cont.	Cont.
Subtotal T&E			14867	1627		1591		1728		Cont.	Cont.	Cont.
Remarks												
Subtotal Management												
Remarks												
Total Cost			14867	1627		1591		1728		Cont.	Cont.	Cont.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X2144
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: SEW Engineering

COST: (Dollars in Thousands)

PROJECT NUMBER/ TITLE	FY 2002 ACTUAL	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	FY 2008 ESTIMATE	FY 2009 ESTIMATE
X2144 SEW Engineering	8,686	9,717	10,066	9,750	11,478	12,497	12,732	12,971

A. 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; 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 6260.01A. Each JWID is designed to identify coalition 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 develops operational procedures for use of these solutions. Service and allied participants benefit from the exposure and training on new and existing technologies, infrastructure improvements left behind from the demonstration, and the knowledge gained on joint and combined operations.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 02	FY 03	FY 04	FY 05
JWID	2,480	2,558	1,759	1,979

- CJCSI 6260.01A 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). Beginning in FY 2003, JWID's advance technology introduction supports the goals and objectives of Joint Vision 2020, CINC priorities, and identifies relevant potential solutions for Allied C4I Interoperability and Coalition Operations.

	FY 02	FY 03	FY 04	FY 05
EC5G	2,879	4,678	3,927	4,220

- In FY 2002, developed architecture and supporting systems to tie together the unique C2 requirements of a battle force for a fully web enabled Network Centric operation that allowed 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 created a huge base of information to be processed and analyzed. The Expeditionary C4 grid (EC4G) automated the infrastructure for forward deployed forces. Performed SEW systems integration efforts for the Expeditionary C5 Grid (EC5G) (the Navy's contribution to the Global Information Grid (GIG)) through the development, planning and execution of the EC5G Limited Objective Experiment (LOE). The LOE demonstrated/validated EC5G networking and communication capabilities to support all warfare missions (i.e. TAMD, TCS, USW, etc.) and support operations. The FY02 experimentation/demonstration was conducted in the lab. Specific experiment focus areas included integrating COTS and Science and Technology (S&T) to enhance communications capabilities via traffic prioritization, load distribution over multiple RF communications links (including a combination of space based and Line of Sight (LOS) links) and a world wide routing architecture.

- Beginning in FY 2003, 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 and provide the Navy's contribution to the Global Information Grid. 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. The FY03 demonstration/validation of EC5G networking and communication capabilities will occur via an operational Fleet Based experiment.

- Beginning in FY 2004, deploy an operational prototype of the EC5G networking and communication capabilities required to support all warfare missions (i.e. TAMD, TCS, USW, etc.) and support operations. Build upon the FY03 Fleet Based experiment and follow the model for Fleet Rapid Prototyping to accelerate delivery of Fleet capability. Continue to optimize experimentation, S&T, and acquisition to transform the tactical/operational network infrastructure for FORCEnet and Network-Centric Operations and provide the Navy's contribution to the Global Information Grid. The EC5G focus areas for the FY04 operational prototype 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, and Allied/Coalition Interoperability.

- Beginning in FY 2005, insert capability enhancements into the operational prototype and continue to refine and mature the prototype while establishing and formalizing a sustainable transition path. Capability enhancements to the operational prototype will focus on the continued merging of stove pipe networks into a global networking and communications capability to support all warfare mission areas. Enhancements to the operational prototype should be made in the following EC5G focus areas: 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, and Allied/Coalition Interoperability.

	FY 02	FY 03	FY 04	FY 05
C4ISR-T Systems Design/Capabilities	433	303	381	426

- Perform C4ISR-T Systems Design effort across Battlegroups and new construction ships. Implement a C4ISR-T Systems Design effort that is comprised of Battlegroup engineering design activities for

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X2144
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: SEW Engineering

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).

	FY 02	FY 03	FY 04	FY 05
AC2WG	399	186	232	248

- 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.

	FY 02	FY 03	FY 04	FY 05
C4ISR Architectural Development	1,198	553	1,108	817

- 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 consists 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. Participate with the Joint Battle Center and Naval Battle Laboratories to verify and validate overall systems designs and detailed implementation designs. Accomplish the decomposition of the overarching POM C4ISR Systems Architecture, which involves breaking down the specifics of warfighter functions to lower levels of detail. From this, SPAWAR will develop 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, allow configuration management of installed designs. Sponsor and/or participate in related IPTs within the claimancy, and throughout the Navy and DoD as required. 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, generate and analyze 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 follows 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.

- In FY 2004, in addition to fleet experiments, OPEVAL and TECHEVAL are planned for large numbers of C4ISR systems below 2GHZ which will use the concepts and designs under this SEW effort, and will require additional research due to different procurement methods such as the spiral development model, to adequately reflect changes in technology and implementation of C4ISR with follow up evaluations in FY 2005.

	FY 02	FY 03	FY 04	FY 05
C4ISR Operational Requirements	532	330	434	462

- 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. Support related C4ISR projects as they define and maintain Theater and Battleforce C4ISR architectures. Integrate future Naval C4ISR capabilities within migration plans and roadmaps linked to operational requirements documentation. 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.

	FY 02	FY 03	FY 04	FY 05
BF Network	765	412	1,402	994

- 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. Beginning in FY 2003, include the network interoperability strategy to ensure this concept is integrated and not a stand alone. Update architecture and technology product initiatives to tie together the unique BFC2 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 C5 grid (EC5G) will automate the infrastructure for forward deployed forces. The tie in from intra ship networking concepts and shore infrastructure will also be developed into the BFC2 architecture.

- Beginning in FY 2004, in addition to fleet experiments OPEVAL and TECHEVAL are planned for large numbers of C4ISR systems below 2GHZ using concepts and designs resulting from this SEW effort. Due to different procurement methods such as the spiral development model, additional research is required to adequately reflect changes in technology and implementation of C4ISR. Follow up evaluations will occur in FY 2005.

	FY 02	FY 03	FY 04	FY 05
BF Architecture/Engineering	-	697	823	604

- Develop technology processes and products 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. Develop architecture and engineering concepts related inter battle group networking for C4ISR systems that interface with organic shore elements and assess meta data requirements for this system. Include the network interoperability strategy to ensure this concept is integrated and not a stand alone.

- In FY 2004, in addition to fleet experiments, OPEVAL and TECHEVAL are planned for large numbers of C4ISR systems below 2GHZ using the concepts and designs resulting from this SEW effort. Due to different procurement methods such as spiral development, additional research is required to adequately reflect changes in technology and implementation of C4ISR.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X2144
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: SEW Engineering

C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

D. ACQUISITION STRATEGY: Not applicable

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X2144
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: SEW Engineering

Exhibit R-3 Cost Analysis (page 1)										Date: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4										PROGRAM ELEMENT 0604707N		
Cost Categories	Contract Method & Type									PROJECT NAME AND NUMBER SEW Engineering X2144		
		Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Complete	Total Cost	Target Value of Contract
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	13188	1965	Various	3714	Various	2841	Various	Cont.	Cont.	Cont.
C4ISR Operational Requirements	Various	Various	4984	330	Various	434	Various	462	Various	Cont.	Cont.	Cont.
AC2WG	Various	Various	1187	186	Various	232	Various	248	Various	Cont.	Cont.	Cont.
Information Repository/Naval Architecture Database	Various	Various	4544							0	4544	4544
Navy Collaborative Int	Various	Various	4000							0	4000	4000
Subtotal Support			45442	2481		4380		3551		Cont.	Cont.	Cont.
Remarks:												

FY 2004/2005 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 2003
Exhibit R-3

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: X2144
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: SEW Engineering

Exhibit R-3 Cost Analysis (page 2)										Date: FEBRUARY 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/4										PROGRAM ELEMENT 0604707N		
Cost Categories			Contract Method & Type							PROJECT NAME AND NUMBER SEW Engineering X2144		
		Performing Activity & Location	Total PYs Cost	FY-03 Cost	FY-03 Award Date	FY-04 Cost	FY-04 Award Date	FY-05 Cost	FY-05 Award Date	Cost To Complete	Total Cost	Target Value of Contract
SEW Engr/JWID	Various	Various	12889	2558	Various	1759	Various	1979	Various	Cont.	Cont.	Cont.
SEW Engr/EC5G	Various	Various		4678	Various	3927	Various	4220	Various	Cont.	Cont.	Cont.
Subtotal T&E	Various	Various	12889	7236		5686		6199		Cont.	Cont.	Cont.
Remarks												
Subtotal Management												
Total Cost			58331	9717		10066		9750		Cont.	Cont.	Cont.

FY 2004/2005 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 2003
Exhibit R-2a

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604707N Project Number: Various
PROGRAM ELEMENT TITLE: SEW Architecture/Eng Support Project Title: Congressional Plus-Ups

Congressional Plus-Ups:

R2630	FY 02	FY 03
Navy Collaborative Integrated Information Technology	1,345	N/A

Supports the Navy's effort at creating an initiative for integrating Information Technology (IT).

X9054	FY 02	FY 03
IT-21 Block 1 C4ISR Computing Equipment Upgrade	5,789	1,662

Information Technology for the 21st Century Block 1 C4ISR Computing Equipment (IT-21 BLK 1) is developmental engineering effort that will add functionality and focus on improving supportability of deployed systems that reduces fleet maintenance and training requirements.

EXHIBIT R4, Schedule Profile			DATE:
Not Applicable			**February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
1319/BA 4	0604707N - SEW Architecture/Eng Support	R2357 - Maritime Battle Center	

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C																																
C																																

R-1 Line Item No. 87

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

Exhibit R-4a, Schedule Detail **Not applicable**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0604707N				PROJECT NUMBER AND NAME R2357 - Maritime Battle Center			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 87

EXHIBIT R4, Schedule Profile			DATE:
Not Applicable			**February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
1319/BA 4	0604707N - SEW Architecture/Eng Support	R2630 - Adv Comm & Info	

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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R-1 Line Item No. 87

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

Exhibit R-4a, Schedule Detail **Not applicable**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0604707N				PROJECT NUMBER AND NAME R2630 - Adv Comm & Info			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 87

EXHIBIT R4, Schedule Profile			DATE:
Not Applicable			**February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
1319/BA 4	0604707N - SEW Architecture/Eng Support	X0798 - OTH Targeting	

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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R-1 Line Item No. 87

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

Exhibit R-4a, Schedule Detail **Not applicable**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0604707N				PROJECT NUMBER AND NAME X0798 - OTH Targeting			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 87

EXHIBIT R4, Schedule Profile			DATE:
Not Applicable			**February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
1319/BA 4	0604707N - SEW Architecture/Eng Support	X2144 - SEW Engineering	

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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C																																

R-1 Line Item No. 87

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

Exhibit R-4a, Schedule Detail **Not applicable**					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0604707N				PROJECT NUMBER AND NAME X2144 - SEW Engineering			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 87

EXHIBIT R4, Schedule Profile			DATE:
Not Applicable			**February 2003**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
1319/BA 4	0604707N - SEW Architecture/Eng Support	X9054 - IT-21 BLOCK 1 C4ISR Computing Equipment Upgrade	

Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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C																																

R-1 Line Item No. 87

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

Exhibit R-4a, Schedule Detail **Not applicable**						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **1319/BA 4**	PROGRAM ELEMENT 0604707N				PROJECT NUMBER AND NAME X9054 - IT-21 BLOCK 1 C4ISR Computing Equipment Upgrade			
Schedule Profile	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008

R-4a Schedule Profile - Item No. 87