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UNCLASSIFIED

DEPARTMENT OF THE NAVY
FY 1996/FY 1997 BIENNIAL BUDGET ESTIMATES

DTIC
ELECTE
MAY 11 1995
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JUSTIFICATION OF ESTIMATES
BUDGET ACTIVITY 5
FEBRUARY 1995

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DTIC QUALITY INSPECTED 5

PE	PE TITLE	R-1
0604212N	ANTI-SUBMARINE WARFARE & OTHER HELO DEVELOPMENT	78
0604214N	AV-8B AIRCRAFT (ENGINEERING)	79
0604215N	STANDARDS DEVELOPMENT	80
0604217N	S-3 WPN SYSTEM IMPROVEMENT	81
0604218N	AIR/OCEAN EQUIPMENT ENGINEERING	82
0604221N	P-3 MODERNIZATION PROGRAM	83
0604231N	TACTICAL COMMAND SYSTEM	84
0604261N	ACOUSTIC SEARCH SENSORS	85
0604262N	V-22	86
0604264N	AIR CREW SYSTEMS DEVELOPMENT	87
0604270N	ELECTRONIC WARFARE DEVELOPMENT	89
0604307N	AEGIS COMBAT SYSTEM ENGINEERING	91
0604366N	STANDARD MISSILE IMPROVEMENTS	93
0604373N	AIRBORNE MINE COUNTERMEASURES	95
0604503N	SUBMARINE SYSTEM EQUIPMENT DEVELOPMENT	96
0604504N	AIR CONTROL	97
0604507N	ENHANCED MODULAR SIGNAL PROCESSOR	98
0604512N	SHIPBOARD AVIATION SYSTEMS	99
0604516N	SHIP SURVIVABILITY	100
0604518N	COMBAT INFORMATION CENTER CONVERSION	101
0604524N	SUBMARINE COMBAT SYSTEM	102
0604558N	NEW DESIGN SSN DEVELOPMENT	103
0604561N	SSN-21 DEVELOPMENT	104
0604562N	SUBMARINE TACTICAL WARFARE SYSTEM	105
0604567N	SHIP CONTRACT DESIGN/LIVE FIRE T&E	106
0604574N	NAVY TACTICAL COMPUTER RESOURCES	107
0604601N	MINE DEVELOPMENT	108
0604603N	UNGUIDED CONVENTIONAL AIR-LAUNCHED WEAPONS	109

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PE	PE TITLE	R-1
0604610N	LIGHTWEIGHT TORPEDO DEVELOPMENT	110
0604612M	MARINE CORPS MINE COUNTERMEASURES (ENGINEERING)	111
0604618N	JOINT DIRECT ATTACK MUNITION	112
0604654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	113
0604703N	PERSONNEL, TRAINING, SIMULATION & HUMAN FACTORS	114
0604710N	NAVY ENERGY PROGRAM	115
0604719M	MARINE CORPS COMMAND/CONTROL/COMMUNICATIONS SYSTEM	116
0604721N	BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM	117
0604727N	JOINT STANDOFF WEAPON SYSTEMS	118
0604755N	SHIP SELF DEFENSE	119
0604771N	MEDICAL DEVELOPMENT (ENGINEERING)	121
0604777N	NAVIGATION/ID SYSTEM	122
0604784N	DISTRIBUTED SURVEILLANCE SYSTEM	123

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 1994	FY 1995	FY 1996	FY 1997	SEC
77	0603889N	Counterdrug RDT&E	05	1,907	-	-	-	U
78	0604212N	ASW & Other Helo Development	05	80,091	88,296	91,803	93,146	U
79	0604214N	AV8B Aircraft (Eng)	05	12,831	10,617	11,309	6,362	U
80	0604215N	Standards Development	05	13,366	15,332	10,567	23,011	U
81	0604217N	S-3 Wpn System Improvement	05	4,087	13,586	12,872	5,404	U
82	0604218N	Air/Ocean Equipment Engineering	05	4,926	5,374	6,182	6,426	U
83	0604221N	P-3 Modernization Program	05	5,055	4,995	1,945	2,801	U
84	0604231N	Tactical Command System	05	30,825	34,688	27,389	27,030	U
85	0604261N	Acoustic Search Sensors	05	28,915	18,416	9,680	10,286	U
86	0604262N	V-22	05	9,793	452,721	762,548	580,929	U
87	0604264N	Air Crew Systems Development	05	14,512	13,994	9,788	14,915	U
88	0604265N	Air Launched Saturation System	05	1,930	-	-	-	U
89	0604270N	EW Development	05	113,286	101,927	87,440	112,512	U
90	0604301N	MK-92 Fire Control System Upgrade	05	1,051	1,711	-	-	U
91	0604307N	AEGIS Combat System Engineering	05	102,632	90,907	105,683	98,360	U
92	0604312N	Tri-Service Standoff Attack Missile	05	74,584	65,660	-	-	U
93	0604366N	Standard Missile Improvements	05	62,272	16,796	8,572	1,980	U
94	0604372N	New Threat Upgrade	05	1,610	1,316	-	-	U
95	0604373N	Airborne MCM	05	31,169	19,752	42,226	49,869	U
96	0604503N	Submarine System Equipment Development	05	56,330	40,507	70,315	79,537	U
97	0604504N	Air Control	05	9,809	7,845	7,815	8,859	U
98	0604507N	Enhanced Modular Signal Processor	05	13,173	11,541	8,342	5,294	U

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 1994	FY 1995	FY 1996	FY 1997	SEC
99	0604512N	Shipboard Aviation Systems	05	1,388	1,521	11,343	9,647	U
100	0604516N	Ship Survivability	05	10,168	8,484	4,907	4,284	U
101	0604518N	CIC Conversion	05	11,359	13,321	15,859	10,524	U
102	0604524N	Submarine Combat System	05	84,547	84,681	43,302	16,461	U
103	0604558N	New Design SSN Development	05	212,458	228,839	347,415	415,017	U
104	0604561N	SSN-21 Development	05	73,742	65,161	83,503	97,805	U
105	0604562N	Submarine Tactical Warfare System	05	33,846	24,330	38,479	32,070	U
106	0604567N	Ship Contract Design/Live Fire T&E	05	41,818	155,790	17,994	15,094	U
107	0604574N	Navy Tactical Computer Resources	05	14,867	18,164	5,499	8,256	U
108	0604601N	Mine Development	05	5,581	3,161	3,045	2,762	U
109	0604603N	Unguided Conventional Air-launched Weapons	05	27,584	77,376	40,517	35,729	U
110	0604610N	Lightweight Torpedo Development	05	8,899	10,876	22,027	16,688	U
111	0604612M	MC Mine Countermeasures (Eng)	05	2,659	420	263	2,914	U
112	0604618N	Joint Direct Attack Munition	05	8,394	25,860	37,832	36,576	U
113	0604654N	Jt Serv Explosive Ordnance Dev	05	6,196	6,242	5,408	5,221	U
114	0604703N	Personnel, Trng, Simulation & Human Factors	05	1,057	1,117	1,043	1,040	U
115	0604710N	Navy Energy Program	05	3,100	3,156	2,628	2,557	U
116	0604719M	MC Command/Control/Communications Sys	05	21,156	10,250	15,380	12,275	U
117	0604721N	Battle Group Passive Horizon Extension System	05	24,035	18,078	7,600	4,995	U
118	0604727N	Joint Standoff Weapon Systems	05	83,354	113,368	81,837	89,344	U
119	0604755N	Ship Self Defense	05	122,869	221,649	165,997	156,932	U
120	0604761N	Intelligence Engineering	05	341	3,941	-	-	U

LINE NO	PROGRAM ELEMENT NUMBER	ITEM NOMENCLATURE	BA	Thousands of Dollars FY 1994	FY 1995	FY 1996	FY 1997	SEC
121	0604771N	Medical Development (Engineering)	05	3,731	1,681	3,402	3,236	U
122	0604777N	Navigation/ID System	05	75,966	67,120	56,472	61,847	U
123	0604784N	Distributed Surveillance System	05	123,755	106,930	93,507	40,510	U
TOTAL	Engineering and Manufacturing Development			1,677,024	2,287,497	2,379,735	2,208,505	

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0485 ALFS	25,145	29,747	18,803	4,014	0	0	0	0	0	158,126
H1109 CH/MH-53	4,951	6,199	10,554	9,261	4,376	908	893	916	0	86,696
H1378 AH-1 A/C	5,484	11,484	14,908	41,898	20,446	9,802	6,839	398	0	212,031
H1707 LAMPS III IMP	44,511	40,866	47,538	37,973	54,544	42,107	18,288	15,138	5,000	390,656
TOTAL	80,091	88,296	91,803	93,146	79,366	52,817	26,020	16,452	5,000	847,509

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) H0485 This program develops ALFS and increases sonobuoy processing capability for the SH-60 helicopter to maintain and improve undersea warfare mission effectiveness against the quiet submarine threat in deep and shallow water environments. This project provides a dipping sonar with demonstrated capabilities typically 3 to 6 times (square miles of ocean searched per hour) the existing deep water capability. This improvement will significantly increase battle group and independent ship protection providing improved survivability and operating flexibility. ALFS provides longer detection ranges and a greater detection capability by using lower frequencies, less signal attenuation, longer pulse lengths, improved processing and increased transmission power. ALFS utilizes the Enhanced Modular Signal Processor, designated UYS-2A, for improved sonobuoy processing capability.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

(U) H1109 - This program develops a Mid-Life Upgrade to provide for improvements to the safety, reliability and maintainability of the CH/MH-53. The upgrade will increase reliability and reduce the cost of ownership. Upgrade efforts include the helicopter drive system, tail rotor disconnect coupling engine air particle separators, and main rotor head.

(U) H1378 - This project provides for development of the AH-1 Integrated Weapons System (IWS) Cockpit Upgrade effort emphasizing workload reduction to increase margin of safety in night, nap-of-the-earth adverse weather operations. The fire control station wiring is performed in conjunction with the development of the Stores Management System (SMS) providing the AH-1 with fire control and advance rocket delivery capability.

(U) H1707 - The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and to add significant capability in coastal littorals and regional conflicts. The Block II Upgrade represents a significant avionics modification to the SH-60 by enhancing primary mission areas of ASW and Anti-Surface Warfare (ASUW). ALFS will be added to enhance the existing acoustic suite. An added multi-mode radar includes an inverse synthetic aperture radar mode (permits stand-off classification of hostile threats). An improved electronics surveillance measures system (ESM) will enable passive detection and targeting of radar sources not currently detectable.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Engineering & Manufacturing Development because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0485 ALFS	25,145	29,747	18,803	4,014	0	0	0	0	0	158,126

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops Airborne Low Frequency Sonar (ALFS) and increases sonobuoy processing capability for the SH-60 helicopter to maintain and improve undersea warfare mission effectiveness against the quiet submarine threat in deep and shallow water environments. This project provides a dipping sonar with demonstrated capabilities typically 3 to 6 times (square miles of ocean searched per hour) the existing deep water capability. This improvement will significantly increase battle group and independent ship protection providing improved survivability and operating flexibility. ALFS provides longer detection ranges and a greater detection capability by using lower frequencies, less signal attenuation, longer pulse lengths, improved processing and increased transmission power. ALFS utilizes the Enhanced Modular Signal Processor, designated UYS-2A, for improved sonobuoy processing capability.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($13,367) Commenced manufacturing of ALFS pre-production (EMD) units. Completed initial Contractor in-water test period. Completed full ALFS system sub-component integration. Completed design verification testing. Commenced Factory acceptance testing of initial EDMs. Commmenced software configuration item test preparations. Continue MSIII logistic support requirements. Provided Government Accounting Office (GAO) directed legal fees for competitors protest.

- (U) ($6,496) Commenced ALFS integrated system design. Commenced requirements definition, interface requirements and display system software specification development. Continued contractor preparation of integrated logistics support requirements.

- (U) ($4,882) Continued software development testing and systems engineering analysis. Completed design verification testing. Continued government MSIII logistics requirements. Continued program support.

- (U) ($400) Completed ALFS UYS-2 non-recurring engineering.

2. (U) FY 1995 PLAN:

- (U) ($16,370) Complete software configuration item preparation and testing. Conduct Reliability and Maintainability (R&M) testing. Conduct Environmental Qualification Test (EQT) and Functional Qualification Test (FQT) test periods. Deliver ALFS pre-production EMD units for developmental testing (DT-IIA). Conduct system Electro Magnetic Interference (EMI)testing. Prepare system for DT-IIA lake testing and follow-on flight testing. Continue MSIII logistic support requirements. Implement congressionally directed shallow water enhancements.

- (U) ($7,730) Commence air vehicle installation equipment design. Develop system Interface Control Document (ICD) for the acoustic system. Deliver ALFS reeling machine pedestal and funnel to support developmental testing (DT-IIA). Write processing and display software. Conduct contractor system integration testing.

- (U) ($5,647) Complete software configuration item testing. Complete R&M, EQT, FQT, and EMI testing. Continue government MSIII logistics requirements. Conduct system-level government acceptance of EDMs. Continue program support. Conduct shallow water enhancement support effort.

3. (U) FY 1996 PLAN:

- (U) ($7,898) Conduct DT-IIA lake and flight testing. Conduct OT-IIA flight testing. Complete contractor preparation of MSIII logistics support requirements.

- (U) ($6,626) Provide support for DT-IIA and OT-IIA flight testing. Conduct integrated system lab verification. Incorporate human factors lessons learned during flight test period. Commence system level SH-60R/ALFS integration.

- (U) ($4,279) Continue government MSIII logistics requirements. Conduct DT-IIA lake and flight testing. Conduct OT-IIA flight testing. Continue program support.

4. (U) FY 1997 PLAN:

- (U) ($501) Analyze test data and implement fixes identified during DT-IIA and OT-IIA in preparation for system TECHEVAL and OPEVAL.

- (U) ($3,513) Complete SH-60R/ALFS system integration development. Complete government logistics requirements. Analyze test data and implement fixes identified during DT-IIA and OT-IIA in preparation for system TECHEVAL and OPEVAL. Complete program support.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	25,181	22,101	XXX	XXX
(U) FY 1995 Appropriated:	XXX	30,501	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-36	-754	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	25,145	29,747	18,803	4,014

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The decrease in FY94 reflects end-of-year execution updates. The reduction in FY 95 reflects Department of the Navy's distribution of Congressional decreases for university research, CSS, FFRDCs, travel and SBIR.

(U) Schedule: TECHEVAL and OPEVAL adjusted from 4/96 and 4/97 to 2/98 and 7/98 to coincide with Block II testing under project H1707.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H0485
PROGRAM ELEMENT: ASW & Other Helo Developments PROJECT TITLE: ALFS

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0604212N (ASW & Other Helo Developments H1707 LAMPS III IMP)
(U) PE 0604507N (Enhanced Modular Signal Processor)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					2Q MS III FY99
Engineering Milestones					
T&E Milestones			1Q DTIIA 4Q OTIIA		2Q TECHEVAL FY98 4Q OPEVAL FY98
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT NUMBER: H0485
PROJECT TITLE: ALFS

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	13,767	16,370	7,898	501
b. Air Vehicle Integration	6,496	7,730	6,626	0
c. Program Management Support	4,882	5,647	4,279	3,513
TOTAL	25,145	29,747	18,803	4,014

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

PROJECT NUMBER: H0485
PROJECT TITLE: ALFS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Hughes Fullerton, CA	C/CPIF	Dec 91	70,873	70,873	35,777	13,367	13,330	7,898	501	0	70,873
LORAL Owego, NY	SS/CPFF	Aug 93	33,267	33,267	12,415	6,496	7,730	6,626	0	0	33,267
AT&T Whippany, NJ	SS/FFP	Mar 91	10,770	10,770	10,370	400	0	0	0	0	10,770
AT&T Whippany, NJ	T&M	Aug 95	2,080	2,080	0	0	2,080	0	0	0	2,080
Martin Marietta Baltimore, MD	T&M	Aug 95	960	960	0	0	960	0	0	0	960
Support and Management											
NAWCWARMINSTER (WX)		Oct 95	16,689	16,689	11,030	2,560	1,577	1,522	0	0	16,689
MISC In-House (WX)		Oct 95	22,831	22,831	10,600	2,176	3,988	2,657	3,410	0	22,831
MISC Contracts (PR)		Oct 95	656	656	225	146	82	100	103	0	656
Test and Evaluation	NOT APPLICABLE										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H0485
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: ALFS

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management			NOT APPLICABLE							
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	58,562	20,263	24,100	14,524	501	0	117,950
Subtotal Support and Management	21,855	4,882	5,647	4,279	3,513	0	40,176
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	80,417	25,145	29,747	18,803	4,014	0	158,126

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1109 CH/MH-53	4,951	6,199	10,554	9,261	4,376	908	893	916	-0-	86,696

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for FY-94 completion of the Main Gearbox Reliability Improvement Program (MGB) and the Global Positioning System (GPS). In FY-95 project initiates an H-53 Service Life Assessment Program (SLAP), a two year study, to develop usage and fatigue life profiles, complete with analytical evaluations of airframe dynamic interfaces leading to design and development recommendations. In FY-96 the program supports a White House requirement to competitively procure, install, test and evaluate an Integrated Mechanical Diagnostics (IMD) system on two Marine Corps CH-53E helicopters. In FY-97 a Service Life Extension Program (SLEP), phase I, begins development of reliability and maintainability improvement phases for aircraft components and systems, such as: engine air particle separators, main rotor head and external cargo handling system. FY-99, phase II, begins a Cockpit development phase to address avionics obsolescence and upgrade issues. Both FY-97 and FY-99 SLEP improvements will increase reliability, maintainability and safety while reducing the cost of ownership through 2025.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,468) GPS - Completed System Integration Laboratory (SIL) testing, Apr 94; Mission Planning Station III (MPS), Feb 94.
- (U) ($ 657) MGB - Completed Flight Testing Sep 94 with ECP submittal Oct 94 for attrition installs by Aviation Supply Office (ASO) funds.
- (U) ($ 826) GPS - Commenced Developmental Testing (DT), Jun 94 with Operational Testing (OT) plan start Feb 95.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

2. (U) FY 1995 PLAN:

- (U) ($ 0) GPS - Complete Developmental Testing (DT), Feb 95; Commence Operational Test Readiness Reviews (OTRR), Feb 95; and Operational Testing (OT) Feb 95 with all testing completed by Mar 95.
- (U) ($5,434) SLAP - Award a two-year developmental study contract March 95 to start redesign of selected components.
- (U) ($ 765) Provide in-house travel and field activities funding to support SLAP.

3. (U) FY 1996 PLAN:

- (U) ($7,154) SLAP - Final incremental contract payment for completion of SLAP study Nov 95.
- (U) ($3,400) IMD - Award IMD system contract Nov 95. Conduct Preliminary Design Review (PDR) Mar 96; and Critical Design Review Aug 96.

4. (U) FY 1997 PLAN:

- (U) ($8,061) SLEP - Award Service Life Extension Program (SLEP) contract, phase I, Dec 96.
- (U) ($1,200) IMD - Award contract increment Oct 96 and commence Early Operational Assessment Testing (EOAT) Nov 96.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,468	6,394	XXX	XXX
(U) FY 1995 Appropriated:	XXX	6,394	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-517	-195	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	4,951	6,199	10,554	9,261

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY94 reduction of $517K reflects a realignment of funds to pay cancelled "M" account bills. The FY95 reduction of $195K reflects the allocation of undistributed adjustments.

(U) Schedule: A delay at contractor facility and deficiency problems found during Developmental Testing (DT) of the GPS integration software have slipped Operational Testing (OT) by two months. Operational Testing is now planned to start Feb 95 with completion Mar 95. FY-94 milestones have been adjusted to reflect schedule change. In FY-95, based on the results of the FY-92 Reliability and Maintainability (R&M) study, funded by the production program, the Midlife Upgrade Program was restructured to provide for the development of a SLEP kit incorporation, USMC performance, survivability and cargo handling capabilities concurrently with R&M improvements. The restructured program schedule now shows the SLAP (a two year study) starting in FY-95, to define components and airframe changes required to be developed and incorporated in the SLEP kit under two phases.

(U) Technical: "Not applicable"

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN Line 26										
(SLEP)	0	0	0	0	0	13,231	10,418	9,506	CONT	CONT
(GPS)	840	10,463	6,473	7,815	15,407	24,108	2,084	0	0	70,869

(U) RELATED RDT&E: NOT APPLICABLE

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		2Q OTRR GPS	2Q IMD PDR 4Q IMD CDR		
Engineering Milestones					
T&E Milestones	3Q DT GPS	2Q OT GPS		1Q IMD EOAT	1Q/98 SLEP I EQT 2Q/98 SLEP I DT 4Q/98 SLEP I OT (MS-II)
Contract Milestones		2Q SLAP AWD	1Q IMD AWD	1Q SLEP I AWD	1Q/99 SLEP II AWD (MS-III)

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Travel	207	145	200	221
b. Miscellaneous	30	450	405	297
c. Reliability, Maintainability and Availability	446	5,434	6,526	7,149
d. Engineering Support	42	45	46	47
e. Program Management Support	98	125	177	197
f. Engineering Development	0	0	3,200	1,050
g. Development Test and Evaluation	686	0	0	0
h. Software Development	3,302	0	0	0
i. Operational Test and Evaluation	140	0	0	300
Total	4,951	6,199	10,554	9,261

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
EER-Global Positioning Systems (GPS) Integration											
Vienna, VA											
N0001989C0166	SS-CPIF	8/90	22,821	22,821	20,175	2,646					22,821
SIKORSKY-Service Life Assessment Program (SLAP)											
Stratford, CT											
	SS-CPFF	3/95	TBD	11,960			5,434	6,526			11,960
TBD-Service Life Extension Program (SLEP)											
	SS-TBD	12/96	TBD	9,649					7,149	2,500	9,649
TBD-Integrated Mechancial Diagnostics (IMD)											
	C-CPIF	11/95	TBD	6,050				3,200	1,050	1,800	6,050
Miscellaneous (less than 1 million)			29,140	29,140	24,810	1,479	595	605	518	1,133	29,140
	VARIOUS	VARIOUS									
Support and Management:											
Miscellaneous (less than 1 million)			4,795	4,795	3,258	140	170	223	244	760	4,795
	VARIOUS	VARIOUS									

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 19

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1109
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: CH/MH-53

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation:											
Miscellaneous (less than 1 million)	VARIOUS	VARIOUS	2,281	2,281	395	686	0	0	300	900	2,281

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management			NOT APPLICABLE							
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	44,985	4,125	6,029	10,331	8,717	5,433	79,620
Subtotal Support and Management	3,258	140	170	223	244	760	4,795
Subtotal Test and Evaluation	395	686	0	0	300	900	2,281
Total Project	48,638	4,951	6,199	10,554	9,261	7,093	86,696

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1378/ AH-1 A/C	5,484	11,484	14,908	41,898	20,446	9,802	6,839	398	0	212,031

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the AH-1W attack helicopter is to provide close-in-fire support and fire support coordination in aerial ground escort operations during the ship-to-shore phase in amphibious operations and during subsequent operations ashore. AH-1 Integrated Weapons System (IWS) emphasizes cockpit workload reduction to increase margin of safety in night, nap-of-the-earth and adverse weather operations. Integration includes on-board mission planning, communications, digital fire control, self navigation, night targeting and weapons systems. As discrete systems have been added to the aircraft, pilot workload has progressively worsened. The Board of Inspection and Survey identified the lack of system integration as the most critical deficiency affecting mission completion. The fire control wiring is performed in conjunction with the development of the Stores Management System (SMS), providing the AH-1 with a simultaneous air-to-air missile, air-to-ground capability and advanced rocket delivery capability.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($ 0) Obtained Night Targeting System (NTS) Milestone III approval for Full Rate Production.
- (U) ($4,022) Completed engineering design effort and began Stores Management System (SMS)/fire control station wiring integration.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

- (U) ($1,462) Prepared and initiated technical review of Integrated Weapons System (IWS) proposals and prepared documentation in support of Milestone IV/II approval.

2. (U) FY 1995 PLAN:

- (U) ($ 0) Obtain IWS MS IV/II approval for Engineering and Manufacturing Development (E&MD) and award competitive contract.
- (U) ($8,885) Begin IWS engineering design effort.
- (U) ($2,599) SMS/fire control wiring prototype incorporation.

3. (U) FY 1996 PLAN:

- (U) ($11,628) Complete preliminary design, begin software coding and conduct preliminary design review (PDR).
- (U) ($ 3,280) SMS field activity and test support.

4. (U) FY 1997 PLAN:

- (U) ($39,889) Conduct critical design review (CDR); complete majority of software coding; and complete fabrication, installation and checkout of two Engineering Development Models (EDM's).
- (U) ($2,009) SMS field activity and Developmental Test/Operational Test (DT/OT) test support.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,492	15,953	XXX	XXX
(U) FY 1995 Appropriated:	XXX	11,953	XXX	XXX
(U) Adjust from Appropriated/FY 1995 PRESBUD:	-8	-469	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	5,484	11,484	14,908	41,898

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1994 reduction of -$8K reflects end-of-the-year execution update. The FY 1995 decrease of $469K reflects the allocation of undistributed adjustments.

(U) Schedule: Due to Resource Sponsor realignments/adjustments, MSIII was rephased from 12/99 to 11/00 to support funding profile realignment.

(U) Technical: None.

Exhibit R-2

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN: H-1 (B.A. 5), Line 28 (053200) (IWS only)						14,623	27,100	40,062	510,943	592,728

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	2Q NTS MS III	3Q IWS MS IV/II			1Q/01 IWS MS III
Engineering Milestones			3Q IWS PDR	1Q IWS CDR	
T&E Milestones					3Q/98 IWS DTIIB/OTIIA 2Q/00 IWS TECHEVAL 4Q/00 IWS OPEVAL
Contract Milestones	4Q IWS Proposal Review	3Q IWS EMD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Hardware Development	2,170	4,443	11,452	35,200
b. Software Development	1,380	3,567	1,344	2,754
c. Test and Evaluation	45	259	190	1,882
d. Engineering & Technical Support	1,656	2,071	887	762
e. Program Management	233	1,144	1,035	1,300
Total	5,484	11,484	14,908	41,898

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Major Contracts:											
DRAPER Cambridge, MA	SS CPFF	12/92	9,503	9,503	3,538	2,170	1,443	2,352	0	0	9,503
TBD	TBD	5/95	TBD	62,000		0	3,000	9,100	35,200	14,700	62,000
In-House Support:											
NAWC-WD, China Lake	WX	02/96	17,202	17,202		1,380	3,567	1,344	2,754	8,157	17,202
Misc. Support	WX	02/96	13,094	13,094	155	1,656	2,071	887	762	7,563	13,094
Support and Management											
In-House Support: (Travel)	Various					152	158	130	130	537	1,107
Misc. CS Contracts:	Various					81	986	905	1,170	3,429	6,571
Test and Evalaution Support	Various						45	259	190	1,882	3,099

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1378
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT PROJECT TITLE: AH-1 AIRCRAFT

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development		Not Applicable								
Support and Management		Not Applicable								
Test and Evaluation		Not Applicable								

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	3,693	5,206	10,081	13,683	38,716	30,420	101,799
Subtotal Support and Management		233	1,144	1,035	1,300	3,966	7,678
Subtotal Test and Evaluation		45	259	190	1,882	3,099	5,475
Other FY 1993 & Prior Costs	97,079						97,079
Total Project	100,772	5,484	11,484	14,908	41,898	37,485	212,031

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1707 LAMPS III IMP	44,511	40,866	47,538	37,973	54,544	42,107	18,288	15,138	5,000	390,656

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and adds significant capability in coastal littoral and regional conflicts. The Block II Upgrade entered Engineering and Manufacturing Development (EMD) in FY93 and represents a significant avionics modification to the SH-60B greatly enhancing both primary mission areas of ASW and ASUW. The ALFS will be added to enhance the existing acoustic suite. ASUW effectiveness will be improved with the addition of a multi-mode radar which includes an inverse synthetic aperture radar mode to permit stand-off classification of hostile threats. An improved ESM system will enable passive detection and targeting of radar sources not detectable with the current system. Aircrew and aircraft survivability in hostile environments will be significantly improved through software integration of the self-defense equipments. Provisions for a tactical data transfer system to improve platform interoperability by rapid, secure transfer of mission information between multiple air and surface units is included in the upgrade.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($38,730) Continued EMD including system and subsystem design and development; continued subsystem hardware development procurement; conducted Technical Baseline Review and subsystem design reviews; continue airframe modification analysis for Block II avionics; began laboratory build and integration, began high level simulation/stimulation design; conducted Subsequent Application Review (SAR) of management control system.

- (U) ($2,112) Incremental funding payment for ALFS Engineering Development Model (EDM).

- (U) ($3,669) Provided continued Navy engineering support, program management, hardware and software independent verification and validation (IV&V) and travel.

2. (U) FY 1995 PLAN:

- (U) ($38,343) Continue EMD including continuation of system level design leading to a system Preliminary Design Review (PDR); continue laboratory simulation/stimulation; system software high level design begins, continue airframe modification design analysis; conduct System Software Review (SSR).

- (U) ($1,993) Navy system engineering field support for system PDR, continue hardware and software IV&V; deliver ALFS EDMs and travel.

- (U) ($530) Prepare for initial ASW/ALFS developmental testing (DTIIA).

3. (U) FY 1996 PLAN:

- (U) ($42,410) Install and integrate prototype data handling equipment in lab, commence air vehicle modifications, prepare and submit documentation to support a system Critical Design Review (CDR), begin high level software coding and test, continue laboratory simulation/stimulation testing.

  (U) ($4,128) Navy system engineering support in preparation for CDR, continue hardware and software V&V, program management and travel.

- (U) ($1,000) Conduct support for ALFS/ASW developmental testing (DTIIA) and test planning and analysis support for DTIIB.

4. (U) FY 1997 PLAN:

- (U) ($32,686) Conduct system CDR, complete system software coding and test, complete laboratory simulation/stimulation testing, commence system integration and test, conduct engineering development tests on prototype multi-mode radar, begin avionics installation on prototype aircraft, commence high level design of Post Low Rate Initial Production Test processing and Tactical Decision Aid software.
- (U) ($3,687) Navy system engineering support during CDR, lab integration and testing, Integrated Test Team planning and support, continue IV&V effort, program management and travel.
- (U) ($1,600) Test Readiness Review (TRR) in preparation for DTIIB.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	44,575	42,099	XXX	XXX
(U) FY 1995 Appropriated:	XXX	42,099	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-64	-1,233	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	44,511	40,866	47,538	37,973

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The decrease in FY94 reflects end-of-year execution updates. The reduction in FY 95 reflects Department of the Navy's distribution of Congressional decreases for university research, CSS, FFRDCs, travel and SBIR.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1707
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments PROJECT TITLE: LAMPS III IMP

(U) Schedule: The funding changes since Milestone II Navy Program Decision Meeting (NPDM) (7/21/93) have resulted in the following restructured program schedule from the approved MS II Baseline:

Schedule Event	MS II Baseline Objective	FY 95 Budget Rebaseline Objective
Preliminary Design Review	APR 1994	JUL 1995
Critical Design Review	MAY 1995	OCT 1996
LRIP Contract Award	DEC 1997	NOV 1998
LRIP First Delivery	DEC 1999	JUL 2000
Technical Evaluation		
Start	MAY 1999	JAN 2000
Finish	NOV 1999	JUN 2000
Operational Evaluation		
Start	FEB 2000	SEP 2000
Finish	JUL 2000	MAR 2001
Milestone III	NOV 2000	JUN 2001
Initial Operating Capability	MAR 2001	SEP 2001

The following actions have resulted from the FY95 funding profile adjustments:

- Reduced Manpower necessary to support the System Level Critical Design Review.
- Delayed requirements analysis for Operator Assistance Software Programs; necessary to support entry to TECHEVAL and OPEVAL (to support Software Requirement Specification development in FY97).
- Delayed or no System Level Modeling which simulates System Level behavior/functionality prior to actual Hardware and Software System Integration.
- Delayed Integrated (Contractor/Government Team) Test Planning.
- Delayed HAZMAT and Environmental Impact Assessments necessary for MS III.
- Delayed Support Equipment Requirements Development.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1707
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments PROJECT TITLE: LAMPS III IMP

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN-1 LINE 11	0	0	0	0	96,607	304,443	340,273	371,076	3,561,203	4,673,602
(U) APN-6 LINE 47	0	0	0	0	4,748	17,991	35,704	CONT	CONT	

(U) RELATED RDT&E:

(U) PE 0604212N, (ASW and Other Helo Developments, H0485, ALFS)
(U) PE 0604507N, (Enhanced Modular Signal Processor)
(U) PE 0604261N, (Acoustic Search Sensors)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestone					3Q MS III FY01 4Q IOC FY01
Engineering Milestones		1Q SSR 4Q PDR		1Q CDR	2Q TRR FY 98
T&E Milestones			1Q DTIIA		2Q DTIIB FY 98 4Q OTIIA FY 98 2Q TECHEVAL FY 00 1Q OPEVAL FY01
Contract Milestones					1Q LRIP FY99

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1707
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments PROJECT TITLE: LAMPS III I

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Hardware/Software Development	40,842	38,343	42,410	32,686
b. Program Management Support	3,533	1,881	4,046	3,602
c. Development Test & Evaluation	0	530	1,000	1,600
d. Travel	136	112	82	85
Total	44,511	40,866	47,538	37,973

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments
PROJECT NUMBER: H1707
PROJECT TITLE: LAMPS III IMP

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Loral Owego, NY	SS/CPFF	Aug 93	271,295	271,295	14,461	38,730	38,343	42,410	32,686	104,665	271,295
Hughes Fullerton, CA	C/CPIF	Dec 91	6,805	6,805	4,693	2,112	0	0	0	0	6,805
Support and Management											
NAWCADWARMINSTER (WX)		Oct 95	25,113	25,113	11,309	1,680	544	1,394	1,686	8,500	25,113
MISC In-house (WX)		Oct 95	19,027	19,027	6,591	1,847	1,236	2,579	1,840	4,934	19,027
MISC Contracts (PR)		Oct 95	1,413	1,413	224	142	213	155	161	518	1,413
Test and Evaluation											
NAWCADPAX (WX)		Oct 95	19,590	19,590	0	0	530	1,000	1,600	16,460	19,590

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments

PROJECT NUMBER: H1707
PROJECT TITLE: LAMPS III IMP

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development Support and Management Test and Evaluation	NOT APPLICABLE									

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	19,154	40,842	38,343	42,410	32,686	104,665	278,100
Subtotal Support and Management	18,124	3,669	1,993	4,128	3,687	13,952	45,553
Subtotal Test and Evaluation	0	0	530	1,000	1,600	16,460	19,590
Other FY93 and Prior Costs	47,413						47,413
Total Project	84,691	44,511	40,866	47,538	37,973	135,077	390,656

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0652 AV-8B	12,831	10,617	11,309	6,362	2,085	1,648	0	0	0	1,503,538

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The program provides AV-8B integration and testing of various weapons aircraft improvements including: installation of the AN/APG-65 multimode radar; incorporation F402-RR-408 engine improvements; flight test of modifications that improve aircraft flight performance; and limited evaluation of advance concepts and activities to coordinate with ongoing independent advance weapons developments, and incorporation of common integrated night attack/radar software (C-1). AN/APG-65 radar integration is a joint development effort among the Governments of the United States (USG), Italy and Spain to install, integrate and test the AN/APG-65 radar (currently in use on the F/A-18) which provides enhanced air-to-air weapons delivery capability. The F402-RR-408 is a derivative of the -406A engine presently in service; it provides increased thrust for improved performance, safety, and survivability. C-1 software is a combined Operational Flight Program (OFP) for the night attack and radar in the aircraft which establishes the baseline OFP for future weapons. Airframe improvements include expansion of the flight envelope and 100% Leading Edge Root Extension (LERX), a joint development with the United Kingdom that increases instantaneous turn rate and combat capability. Advanced weapons coordination includes requirements liaison with efforts such as the Advanced Rocket System, Joint Direct Attack munitions, Joint Standoff Weapon, and AIM-9X.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($328) Continued advanced studies/advanced weapons coordination.
- (U) ($145) Released Block 1 (R1) Radar Software to United States Marine Corps(USMC).
- (U) ($8,867) Released Block 2 (R2) Radar Software to the USMC and Government of Italy(GOI) to provide Air-to-Surface radar modes.
- (U) ($725) Conducted flight performance testing of various modifications.
- (U) ($614) Conducted ground and flight testing for F402-RR-408 engine improvement. Issued final fleet operating clearances.
- (U) ($2,152) Development of common integrated night attack/radar software (C1.0)

2. (U) FY 1995 PLAN:

- (U) ($562) Continue advanced studies/advanced weapon projects.
- (U) ($500) Complete DT/OT testing and release Block 3 (R3) Radar Software to the USMC and GOI to provide Initial Operational Capability (IOC) with full Air-to-Surface and Air-to-Air radar modes.
- (U) ($6,374) Continue development and commence integration of common-configuration, integrated night attack/radar software (C1.0)
- (U) ($1,675) Conduct aircraft handling investigations.
- (U) ($1,506) Conduct Survivability and Vulnerability (S&V) studies to determine most cost effective approaches/alternatives.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

3. (U) FY 1996 PLAN:

- (U) ($250) Continue advanced studies/advanced weapon projects.
- (U) ($1,100) Conduct engine inlet guide vane controller studies.
- (U) ($400) Conduct flight performance testing of various modifications, including engine modifications.
- (U) ($300) Conduct preliminary airframe installation/integration design for joint Advanced Missile Warning System (AMWS).
- (U) ($500) Determine airframe installation/integration requirements for the joint AMWS.
- (U) ($5,725) Continue development and begin testing of common integrated night attack/radar software (C1.0).
- (U) ($300) Commence second version of common integrated night attack radar software (C2.0). C2.0 addresses improved APG-65 radar software.
- (U) ($1,275) Continue aircraft handling investigations.
- (U) ($1,459) Continue S&V studies to determine most cost effective approaches/alternatives.

4. (U) FY 1997 PLAN:

- (U) ($400) Continue advanced studies/advanced weapons projects.
- (U) ($500) Continue preliminary airframe installation/integration designs for joint AMWS.
- (U) ($325) Complete DT/OT testing and release first version common integrated night attack/radar software (C1.0).
- (U) ($300) Continue development and begin testing of common integrated night attack/radar software (C2.0).

- (U) ($2,137) Continue aircraft handling investigations.
- (U) ($2,300) Continue S&V studies.
- (U) ($400) Complete engine inlet guide vane controller studies.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 19

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604214N PROJECT NUMBER: H0652
PROGRAM ELEMENT TITLE: AV-8B Aircraft PROJECT NAME: AV-8B

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	18,179	10,203	XXX	XXX
(U) FY 1995 Appropriated:	XXX	11,203	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG	-5,348	-586	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	12,831	10,617	11,309	6,362

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The reduction from PRESBUDG in Fiscal Year 1994 reflects both omnibus reprogramming of $7.5M and an increas of $+2,152M to begin development of common integrated night attack/radar software (C1.0). The reduction in FY95 of -$586 reflects the allocation of undistributed adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
• (U) APN-1/Line 2/3/AV-8B (V/STOL) Harrier										
	136,599	130,270	169,745	369,218	326,974	345,054	332,853	357,570	0	2,168,28
QTY	4	4	4	12	12	12	12	12		72
• (U) APN-5/Line 21/AV-8 Series										
	22,732	22,754	16,007	20,395	34,622	50,024	57,665	32,840	CONT.	CONT.
• (U) APN-6/Spares										
	2,802	1,750	15,945	8,731	12,353	24,900	20,750	20,750	0	107,98

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

(U) RELATED RDT&E: Not Applicable

(U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones		1Q R3 S/W DT/OT COMPLETE		1Q C1.0 DT/OT COMPLETE	1Q FY99 C2.0 DT/OT COMPLETE
T&E Milestones	1Q R1 S/W RTF 4Q R2 S/W RTF	1Q R3 S/W RTF		1Q C1.0 S/W RTF	1Q FY99 C2.0 S/W RTF
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. CONTRACTS	1,900	1,800	1,450	791
CS (NON-ADD)	1,900	1,800	1,450	791
b. TECHNICAL SUPPORT	8,954	6,658	8,153	3,941
c. TRAVEL	350	325	300	280
d. T&E	1,627	1,834	1,406	1,350
Total	12,831	10,617	11,309	6,362

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: Februay 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
NAWC-WD, CHINA LAKE, CA	WX	11/95	34,117	34,117	9,071	8,302	6,000	7,295	3,084	365	34,117
NAWC,AD, PATUXENT RIVER, MD	WX	10/95	3,247	3,247	1,747	300	300	350	350	200	3,247
MISC/CONTRACTS	Var	10/95	965	965	0	0	252	227	237	249	965

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 19

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Progra
MISC. in-house	WX	10/95	4,798	4,798	2,125	702	426	450	550	545	4,79
Support and Management	WX	N/A	43,989	43,989	43,989	0	0	0	0	0	43,98
Misc/Contracts	Var	Var	900	900	0	900	0	0	0		90
DCS/KHX ARLINGTON, VA	SS/CPFF	10/95	4,841	4,841	0	0	1,800	1,450	791	800	4,84
Misc/In-House	Var	Var	1,000	1,000	0	1,000	0	0	0	0	1,00
Test and Evaluation: NAWC-WD, CHINA LAKE, CA	WX	10/95	10,716	10,716	6,758	858	1,200	931	800	169	10,71
NAWC,AD, PATUXENT RIVER, MD	WX	10/95	4,574	4,574	2,324	600	500	450	500	200	4,57

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604214N
PROGRAM ELEMENT TITLE: AV-8B Aircraft

PROJECT NUMBER: H0652
PROJECT NAME: AV-8B

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Total Delivery Date	FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development		Not Applicable								
Support and Management		Not applicable								
Test and Evaluation Misc.	WX	10/95	12/95	37,513	169	139	156	50	0	38,027

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	12,943	9,304	6,978	8,322	4,221	1,359	43,127
Subtotal Support and Management	43,989	1,900	1,800	1,450	791	800	50,730
Subtotal Test and Evaluation	46,595	1,627	1,839	1,537	1,350	369	53,317
Other FY-93 and Prior Costs	1,356,364						1,356,364
Total Project	1,459,891	12,831	10,617	11,309	6,362	2,528	1,503,538

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROGRAM ELEMENT TITLE: Standards Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1857	Calibration Standards									
	3,340	4,572	3,053	2,446	2,471	3,053	3,070	3,162	CONT.	CONT.
W0572	Joint Services/Navy Standard Avionics Components and Subsystems									
	10,026	10,760	7,514	20,565	21,668	31,457	31,813	32,606	CONT.	CONT.
TOTAL	13,366	15,332	10,567	23,011	24,139	34,510	34,883	35,768		

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project W0572, Joint Services/Navy Standard Avionics Components and Subsystems: This project addresses the proliferation in Naval Aviation of unique avionics equipment that increases with each new or modified aircraft. This proliferation of unique Contractor Furnished Equipment (CFE), due to non-availability of off-the-shelf Government Furnished Equipment (GFE), has resulted in a growing cost burden in the areas of development, procurement, logistics, and maintenance. This project addressses the issue by developing common avionics for new programs and retrofit programs. All acquisition approaches are followed for the least-cost solution to this need, including joint programs, GFE breakout of peculiar items for broad use, foreign and non-development item investigations (funded under those headings when appropriate) and, when practicable and cost effective, dedicated development efforts. These products have application to new architecture "integrated avionics" aircraft, and also older technology "black box" or federated aircraft with major new efforts directed at bridging the gap between these technologies. This forward and retrofit application of common avionics technology is required to maximize aircraft capabilities at a minimum procurement and support cost. The program will address in-service-out-of-production avionics with costly reliability and maintainability deficiencies and includes planning for the development of components/subsystems which have high reliability, are easily maintained and have low life cycle costs. An example of a past successful task under this project is the Standard Central Air Data Computer (SCADC) jointly developed with the Air Force and now in production as a common system on Navy and Air Force aircraft. Using an integrated common module approach, the reliability of SCADC is 10 to 50 times greater than the 13 types of air data computers it replaced. This project also funds Navy participation and activities involving the Joint Service Review Committee (JSRC) for Avionics Standardization.

(U) Project S1857, Calibration Standards: This project is a Navy-wide program to develop required calibration standards (hardware) in all major measurement technology areas. It funds Navy lead-service responsibilities in the DoD metrology RDT&E program.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROJECT NUMBER: W0572
PROGRAM ELEMENT TITLE: Standards Development PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0572 Joint Services/Navy Standard Avionics Components and Subsystems	10,026	10,760	7,514	20,565	21,668	31,457	31,813	32,606	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Service/Navy Standard Avionics Components and Subsystems project provides for the identification, design, development, test, evaluation and qualification of standard avionics for Navy use, and wherever practicable, use across all services. Standard avionics systems under development include the Ground Proximity Warning System (GPWS) for Tactical Aircraft (TACAIR); Compass/Attitude Heading Reference System (C/AHRS), a joint service program development with the Air Force; a joint service Solid State Barometric Altimeter (SSBA), Low Probability of Intercept (LPI) Altimeter, a joint service Embedded Global Positioning System (GPS)/Inertial Navigation System (EGI), Tactical Aircraft Moving Map Capability (TAMMC), GPS Guidance Package (GGP), Flight Avionics Displays (FAD), and Common Tactical Mission Recorder (CTMR).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,252) Continued qualification testing for C/AHRS and began Technical Evaluation (TECHEVAL).
- (U) ($3,128) Continued Engineering & Manufacturing Development (E&MD) of GPWS Helo.
- (U) ($1,476) Completed GPWS TACAIR algorithm development; transition capability to aircraft platforms.
- (U) ($ 719) Conducted risk assessment for LPI Altimeter; released the Request for Information (RFI).
- (U) ($ 190) Completed integration and testing of SSBA.
- (U) ($1,261) Participated in JSRC tri-service coordination to promote commonality and joint programs.

2. (U) FY 1995 PLAN:

- (U) ($2,098) Deliver four (4) E&MD units; complete C/AHRS program.
- (U) ($2,414) Begin TECHEVAL for GPWS Helo.
- (U) ($1,418) Release Request for Proposal (RFP); prepare milestone documentation; conduct source selection for LPI Altimeter contract.

- (U) ($ 957) Plan GPWS TACAIR algorithm integration into multiple platforms.
- (U) ($1,985) Participate in JSRC tri-service coordination to promote commonality and joint programs.
- (U) ($1,388) Conduct risk assessment for TAMMC.
- (U) ($ 290) Conduct risk assessment for GGP.
- (U) ($ 210) Development oversight and system testing for EGI.

3. (U) FY 1996 PLAN:

- (U) ($ 250) Continue risk assessment for GGP.
- (U) ($ 810) Continue GPWS TACAIR missionization for AV-8B, T-45, and F-14 aircraft.
- (U) ($3,086) Award E&MD contract; conduct Preliminary Design Review (PDR) for LPI Altimeter.
- (U) ($ 913) Conduct risk assessment for FAD; release RFP.
- (U) ($1,360) Release RFP; conduct source selection for TAMMC E&MD contract.
- (U) ($1,095) Participate in JSRC tri-service coordination to promote commonality and joint programs.

4. (U) FY 1997 PLAN:

- (U) ($ 800) Continue GPWS TACAIR missionization for AV-8B, T-45, and F-14A/C.
- (U) ($3,930) Conduct Critical Design Review (CDR); begin TECHEVAL for LPI Altimeter.
- (U) ($ 950) Release RFP for GGP.
- (U) ($4,520) Achieve Milestone II and award E&MD contract for FAD.
- (U) ($4,690) Achieve Milestone II and award E&MD contract for CTMR.
- (U) ($4,145) Achieve Milestone II and award E&MD contract for TAMMC.
- (U) ($1,530) Participate in JSRC tri-service coordination to promote commonality and joint programs.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development
PROJECT NUMBER: W0572
PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	10,026	11,402	XXX	XXX
(U) FY 1995 Appropriated:	XXX	11,402	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-642	XXX	XXX
(U) FY 1996/97 PRESBUDG Budget Submit:	10,026	10,760	7,514	20,565

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95: (-121K) for SBIR and miscellaneous undistributed Congressional reductions: University Research (-18), CSS (-456), FFDRC (-32), and Travel (-15).

(U) Schedule: MS II for Low Probability of Intercept Altimeter (LPIA) delayed 6 months due to administrative factors.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0604201F Common Avionics (Joint AF program with C/AHRS)
(U) PE 0708026F Producibility, Reliability, Availability and Maintainability (Joint AF program with SSBA)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q SSBA MS III		1Q LPIA MS II	2Q MS II FAD 3Q MS II CTMR 1Q MS II TAMMC	
Engineering Milestones			3Q LPIA PDR	1Q LPIA CDR	
T&E Milestones		4Q GPWS HELO DT		2Q LPIA DT	
Contract Milestones				3Q EMD AWD FAD 3Q EMD AWD CTMR 2Q EMD AWD TAMMC	

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1857 CALIBRATION STANDARDS	3,340	4,572	3,053	2,446	2,471	3,053	3,070	3,162	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides the engineering development of measurement reference/calibration standards (hardware) required to ensure measurement accuracy in support/maintenance of new advanced technology weapon systems and associated support equipment. These individual tasks have been assigned to the Navy as lead-service responsibilities as part of a Joint Service/DoD program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,583) Completed development of 13 calibration standards (hardware) supporting fiber optic communication systems, fiber optic sensors, pilot air breathing systems, ships' boiler systems, laser target tracking systems, stealth technology, pressure vessels, and infrared target identification systems.
- (U) ($1,431) Completed 66% of the development of 8 calibration standards (hardware) supporting fiber optic detectors, fiber optic hydrophones, laser transmitters, piston gauges, screw thread gauges, and low pressure gauges used in nuclear facilities.
- (U) ($ 326) Completed 33% of the development of 2 calibration standards (hardware) supporting microwave power measurements and chemical and biological warfare sensors.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

DGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROJECT NUMBER: S1857
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT PROJECT TITLE: CALIBRATION STANDARDS

2. (U) FY 1995 PLAN:

- (U) ($1,425) Complete development of 10 calibration standards (hardware) in support of fiber optic hydrophones, fiber optic detectors, screw thread gauges, fiber optic communication, radar systems, laser targeting systems, piston gauges, and low pressure gauges in nuclear facilities.
- (U) ($1,182) Complete 66% of the development of 9 calibration standards (hardware) supporting missile hydraulic systems, fiber optic communication systems, long-line hydrophones, primary resistance measurements, stealth technology, radar systems, chemical and biological warfare sensors.
- (U) ($1,965) Complete 33% of the development of 9 calibration standards in support of infrared dynamic scene generators, polarization based target identifiers/trackers, fiber optic communications, infrared target illuminators, radar systems, and aircraft altimeters.

3. (U) FY 1996 PLAN:

- (U) ($1,207) Complete the development of 6 calibration standards (hardware) in support of missile hydraulic systems, fiber optic communication systems, long line hydrophones, primary resistance measurements, stealth technology, radar systems, chemical and biological warfare sensors.
- (U) ($1,846) Complete 66% of the development of 9 calibration standards (hardware) in support of infrared dynamic scene generators, polarization based target identifiers/trackers, fiber optic communications, infrared target illuminators, radar systems, and aircraft altimeters.

4. (U) FY 1997 PLAN:

- (U) ($1,846) Complete the development of 9 calibration standards (hardware) in support of infrared dynamic scene generators, optic communications, infrared target illuminators, radar systems, and aircraft altimeters.
- (U) ($ 600) Initiate and complete 33% of 2 calibration standards (hardware) in support of physical/mechanical and electro-optical measurements.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT PROJECT NUMBER: S1857 PROJECT TITLE: CALIBRATION STANDARDS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	3,340	4,585	XXX	XXX
(U) FY 1995 Appropriated:	XXX	4,585	XXX	XXX
(U) Adjustments from PRESBUDG:	0	-13	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	3,340	4,572	3,053	2,446

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: No change FY 94. FY 95 reflects undistributed Congressional reductions for University Research (-7) and Travel (-6).

(U) Schedule: Not applicable.

(U) Technical: FY 95: Technology areas impacted are expected to be infrared targeting & detection, Stealth verification techniques, Millimeter Wave Electronic Warfare, countermeasures and communications, fiber optics maintenance support and high accuracy electrical/electronic/measurements.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands) Not apllicable.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development
PROJECT NUMBER: W0572
PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Program Planning	734	925	650	750
b. Technical Program Management Support	140	260	185	390
c. Prime Equipment/E&MD Prime Contract	3,753	1,990	2,000	9,490
d. Platform Integration	299	200	150	1,650
e. System T&E/OT&E	1,874	2,161	659	2,500
f. System Engineering	1,127	2,000	1,674	2,370
g. Documentation	332	390	300	900
h. ILS	103	185	127	300
i. Support Equipment	60	60	60	125
j. Travel	122	150	130	155
k. Contract Services	1,482	2,439	1,579	1,935
Total	10,026	10,760	7,514	20,565

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development
PROJECT NUMBER: W0572
PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	TO Complete	Total Program
Product Development											
Smiths Ind. Michigan	CPIF	6/28/92	9,510	9,510	6,312	2,218	980	0	0	0	9,510
Cubic Corp. Los Angeles, CA	CPFF	8/17/93	3,488	3,488	943	1,535	1,010	0	0	0	3,488
TBD (LPIA)	TBD	TBD	TBD	TBD	0	0	0	2,000	2,600	CONT.	CONT.
TBD (FAD)	TBD	TBD	TBD	TBD	0	0	0	0	2,290	CONT.	CONT.
TBD (CTMR)	TBD	TBD	TBD	TBD	0	0	0	0	2,500	CONT.	CONT.
TBD (TAMMC)	TBD	TBD	TBD	TBD	0	0	0	0	2,100		
NAWC-ADI	Various	Various	Various	Various	3,957	2,572	2,650	2,125	4,290	CONT.	CONT.
Miscellaneous		Various	Various	Various	3,109	345	1,520	1,151	2,350	CONT.	CONT.
Support and Management		Various	Various	Various	1,089	1,482	2,439	1,579	1,935	CONT.	CONT.
Test and Evaluation		Various	Various	Various	3,236	1,874	2,161	659	2,500	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W0572
PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems

	Total FY 1993 & Prior*	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	14,321	6,670	6,160	5,276	16,130	CONT.	CONT.
Subtotal Support and Management	1,089	1,482	2,439	1,579	1,935	CONT.	CONT.
Subtotal Test and Evaluation	3,236	1,874	2,161	659	2,500	CONT.	CONT.
TOTAL PROJECT	18,646*	10,026	10,760	7,514	20,565		

*FY 93 & prior includes program information from FY 90 through FY 93 on programs still remaining in the FYDP years.

UNCLASSIFIED

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT PROJECT NUMBER: S1857 PROJECT TITLE: CALIBRATION STANDARDS

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Program Management Support	167	229	155	160
b. Government Engineering Support	501	685	459	440
c. Primary Hardware Development	2,338	3,200	2,136	1,600
d. Travel	35	47	30	26
e. Misc.	299	411	273	220
Total	3,340	4,572	3,053	2,446

UNCLASSIFIED

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

JDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROJECT NUMBER: S1857
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT PROJECT TITLE: CALIBRATION STANDARDS

(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

ERFORMING ORGANIZATIONS

ntractor/ overnment rforming tivity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
oduct Development											
itional Institute of Standards and Technology aithersburg, MD											
	MIPR	11/15/93	N.A.*	N.A.*	11,971	1,670	2,292	1,499	1,146	CONT.	CONT.
ival Warfare Assessment Division rona, CA											
	WR	10/15/93	N.A.*	N.A.*	7,901	1,113	1,517	1,200	1,000	CONT.	CONT.
sc.	WR	11/15/93	N.A.*	N.A.*	4,070	557	763	354	300	CONT.	CONT.
					23,942	3,340	4,572	3,053	2,446	CONT.	CONT.

pport and Management - Not applicable.

st and Evaluation - Not applicable.

VERNMENT FURNISHED PROPERTY: Not applicable.

This Project is an ongoing task. Performing activities can change from year to year.

(U) FUNDING PROFILE: Not required for this submission.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

UDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROJECT NUMBER: S1857
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT PROJECT TITLE: CALIBRATION STANDARDS

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
ubtotal Product Development	23,942	3,340	4,572	3,053	2,446	CONT.	CONT.
ubtotal Support and Management	0	0	0	0	0	0	0
ubtotal Test and Evaluation	0	0	0	0	0	0	0
otal Project	23,942	3,340	4,572	3,053	2,446	CONT.	CONT.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604217N
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0489 S-3 WSIP	4,087	13,586	12,872	5,404	4,019	4,505	0	0	0	298,584
H2217 Common Support Aircraft (CSA) - (proposed)	0	0	0	0	0	9,860	50,070	59,340	CONT	CONT
TOTAL	4,087	13,586	12,872	5,404	4,019	14,365	50,070	59,340	CONT	CONT

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: H0489 S-3 WSIP - The current program provides continuation of a series of progressive modular improvements which began with the S-3 Weapon System Improvement Program (WSIP) Phase I (S-3A modified to S-3B configuration). Based upon the S-3 WSIP Operational Requirements Document, the full program achieves the required multi-mission operational capability through time-phased, selective mission avionics/processing upgrades that are pursued in priority order. Initial Nunn-funded development focused on the Co-Processor Memory Unit (CPMU) hardware, a joint U.S./Canadian industrial base development program which provides the core processing capability and open architecture required for future modular S-3B modification. This program will complete CPMU integration and test and rewrite existing Tactical Mission Program (TMP) code into Ada high order language.

(U) H2217 COMMON SUPPORT AIRCRAFT(CSA) - This project replaces the S-3B/ES-3A/E-2C aircraft. The CSA project will study and determine the optimum aircraft design to provide a multi-place, common airframe/engine/core-avionics aircraft having sufficient internal volume, internal and external carriage capability, and provisions for mission-specific avionics, sensors, stores and weapons. In addition to meeting the aircraft requirement of the S-3B/ES-3A/E-2C aircraft, the common support airframe will be a primary candidate for tanker and Carrier Onboard Delivery (COD) aircraft missions.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604217N
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0489 S-3 WSIP	4,087	13,586	12,872	5,404	4,019	4,505	0	0	0	298,584

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The current program provides continuation of a series of progressive modular improvements which began with the S-3 Weapon System Improvement Program (WSIP) Phase I (S-3A modified to S-3B configuration). Based upon the S-3 WSIP Operational Requirements Document, the full program achieves the required multi-mission operational capability through time-phased, selective mission avionics/processing upgrades that are pursued in priority order. Initial Nunn-funded development focused on the Co-Processor Memory Unit (CPMU) hardware, a joint U.S./Canadian industrial base development program which provides the core processing capability and open architecture required for future modular S-3B modification. This program will complete CPMU integration and test and rewrite existing Tactical Mission Program (TMP) code into Ada high order language.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($854) Continued translation of existing AN/AYK-10 CMS-2 software code for CPMU compatibility.
- (U) ($300) Commenced TMP Ada software development.
- (U) ($2,933) Continued CPMU hardware and software development and integration.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

2. (U) FY 1995 PLAN:

- (U) ($1,112) Perform CPMU EDM Hardware developmental testing.
- (U) ($9,000) Continue Ada software development for the CPMU.
- (U) ($3,474) Continue hardware and software development and integration.

3. (U) FY 1996 PLAN:

- (U) ($11,926) Continue Ada software development for the CPMU.
- (U) ($796) Continue hardware and software development and integration.
- (U) ($150) Perform Follow on Test and Evaluation (FOT&E) of CPMU.

4. (U) FY 1997 PLAN:

- (U) ($4,191) Continue Ada software development for the CPMU.
- (U) ($496) Continue hardware and software development and integration.
- (U) ($717) Perform Navy developmental testing of CPMU.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,087	14,115	xxx	xxx
(U) FY 1995 Appropriated:	xxx	14,115	xxx	xxx
(U) Adjustments from Approp/FY 1995 PRESBUDG:		-529	xxx	xxx
(U) FY 1996/97 PRESBUDG Submit:	4,087	13,586	12,872	5,404

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95 reduction of $529K reflects the allocation of undistributed Congressional adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN S-3* (OSIP 04-96) Co-Processor Memory Unit	0	0	4,359	8,021	7,197	8,850	10,038	7,981	35,025	81,471

* These are the dollar amounts for the Co-Processor Memory Unit Only.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

(U) RELATED RDT&E:

(U) PE 0604261N (Air Deployed Active Receiver (ADAR)/Low Frequency Active (LFA))
(U) PE 0603790D ((NUNN Funds)-Co-Processor Memory Unit (CPMU) (previously Mass Memory Unit))

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					2Q/CPMU MS-III
Engineering Milestones					
T&E Milestones		1Q/CPMU EDM's Hardware DT II		2Q/CPMU DT II	1Q/CPMU OT-II
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Developmental Testing	0	1,112	150	717
b. Travel	15	25	15	15
c. Technical Support (CS)	40	733	200	100
d. Software Development	4,032	11,716	12,507	4,572
Total	4,087	13,586	12,872	5,404

FY1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Canadian Commercial Corp.	CPFF/Competition	7/91	14,500*	14,500*	450	1,483	250	0	0	0	2,183
*Includes NUNN Amendment funding (RDT&E, Defense Agencies, P.E. 0603700N) and Canadian Funding (Joint Venture)											
Unisys	CPAF/ Sole Source	1/95	TBD	29,261	0	0	9,000	11,926	4,191	4,144	29,261
Other Contracts less than $1.0M					626	2,507	2,466	581	381	4,050	10,611
Support and Management											
Other Contracts less than $1.0M					18	97	758	215	115	330	1,533
Test and Evaluation											
Other Contracts less than $1.0M					0	0	1,112	150	717	0	1,979

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Not Applicable										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: H0489
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: S-3 WSIP

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	1,076	3,990	11,716	12,507	4,572	8,194	42,055
Subtotal Support and Management	18	97	758	215	115	330	1,533
Subtotal Test and Evaluation	0	0	1,112	150	717	0	1,979
Total Project	1,094	4,087	13,586	12,872	5,404	8,524	45,567

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0532 FLEET AIR OCEAN EQUIPMENT	2,543	1,806	2,622	2,657	2,542	4,020	4,182	4,305	CONT.	CONT.
R1740 AIR/OCEAN SURVEY ENGINEERING	1,181	1,241	1,256	1,356	1,378	1,473	1,483	1,526	CONT.	CONT.
X1752 TACTICAL ENVIRONMENTAL SUPPORT SYSTEM - TESS (ENG)	1,202	2,327	2,304	2,413	2,323	2,831	2,858	2,942	CONT.	CONT.
TOTAL	4,926	5,374	6,182	6,426	6,243	8,324	8,523	8,773	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) provides for the engineering development of sensors, communication interfaces, and processing and display equipment to measure, ingest, store, distribute and display atmospheric and oceanographic parameters essential to the optimum employment of Naval warfare systems. The PE also develops increased capabilities for the shipboard and shore based Tactical Environmental Support System - TESS(3). Engineering development of oceanographic survey sensors is also performed under this PE.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0532 FLEET AIR OCEAN EQUIPMENT	2,543	1,806	2,622	2,657	2,542	4,020	4,182	4,305	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the development of Non-ACAT sensors, communication interfaces, and processing and display equipment to measure, ingest, store, distribute and display atmospheric and oceanographic parameters. Major emphasis areas include the Navy Integrated Tactical Environmental Subsystem (NITES), Automated Surface Observing System (ASOS), the Marine Corps Meteorological Mobile Facility (METMF), the AN/SMQ-11 satellite receiver/recorder and other satellite ground equipment, weather radars and the development of new sensors such as active and passive atmospheric profilers for incorporation into the Shipboard Meteorological and Oceanographic Observing System (SMOOS).

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,173) Continued development of NITES to comply with the Joint Maritime Command Information System.
- (U) ($870) Continued development of ASOS to incorporate Navy-unique requirements. Continued system development of METMF and AN/SMQ-11.
- (U) ($500) Began exploitation of Light Detection and Ranging (LIDAR) atmospheric profiler emerging technology to incorporate latest laser and optics technologies.

2. (U) FY 1995 PLAN:

- (U) ($519) Complete development of NITES to comply with the JMCIS command environment.
- (U) ($587) Complete development of ASOS to incorporate Navy-unique requirements; continue system development of METMF and AN/SMQ-11.
- (U) ($600) Continue development of LIDAR atmospheric profiler to incorporate latest laser and optics technologies.
- (U) ($100) Begin system development for weather radar that will detect and monitor severe weather phenomena at airfields where Next Generation Radar (NEXRAD) is unavailable.

3. (U) FY 1996 PLAN:

- (U) ($600) Begin test, evaluation and adapation of non-developmental items (NDI) development in support of data connectivity, interfaces and C2 systems.
- (U) ($663) Begin engineering development of the Navy Tactical Applications Computer Version 4 (TAC-4) NITES workstation.
- (U) ($359) Complete development of existing METMF. Continue system engineering of AN/SMQ-11.
- (U) ($600) Begin system engineering of METMF (Replacement).
- (U) ($300) Continue development of LIDAR atmospheric profiler to incorporate latest laser and optics technologies.
- (U) ($100) Continue system development for weather radar.

4. (U) FY 1997 PLAN:

- (U) ($821) Continue test, evaluation and adaptation of NDI in support of data connectivity, interfaces and C2 systems.
- (U) ($300) Complete engineering development of the TAC-4 NITES workstation.
- (U) ($236) Begin engineering development of the TAC-5 NITES workstation.
- (U) ($500) Continue system engineering of AN/SMQ-11.
- (U) ($400) Complete system engineering of METMF (Replacement)
- (U) ($300) Continue development of LIDAR atmospheric profiler to incorporate latest laser and optics technologies.
- (U) ($100) Complete system development for supplemental weather radar.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,543	2,151		
(U) FY 1995 Appropriated:		2,151		
(U) Adjustments from Approp./FY95 PRESBUDG:	0	-345		
(U) FY 1996/97 PRESBUDG Submit:	2,543	1,806	2,622	2,657

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X0532
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet Air Ocean Equipment

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY95 decrease of $17K to accomodate Small Business Innovation Research and $328K to reflect undistributed reductions for University Research, consulting services and travel.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN line 4226	6,851	13,167	7,448	5,691	9,508	11,149	10,910	10,540	CONT.	CONT.

(U) RELATED RDT&E: PE 0603207N, Air/Ocean Tactical Applications.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X0532
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet Air/Ocean Equipment

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Sensor Development	680	778	970	963
b. System Engineering	1,279	738	1,332	1,344
c. Contractor Engineering Support	544	250	275	300
d. Travel	40	40	45	50
Total	2,543	1,806	2,622	2,657

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X0532
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet Air/Ocean Equipment

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Various	Various	N/A	CONT.	CONT.	10,273	2,041	1,304	2,097	2,132	CONT.	CONT.
Support and Management											
SSA, Wash, DC	7/90 MR	Nov FY	CONT.	CONT.	2,500	502	502	525	525	CONT.	CONT.
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering
PROJECT NUMBER: X0532
PROJECT TITLE: Fleet Air/Ocean Equipment

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	10,273	2,041	1,304	2,097	2,132	CONT.	CONT.
Subtotal Support and Management	2,500	502	502	525	525	CONT.	CONT.
Subtotal Test and Evaluation							
Total Project	12,773	2,543	1,806	2,622	2,657	CONT.	CONT.

C. FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Tactical Application

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R1740 Air/Ocean Survey Engineering	1,181	1,241	1,256	1,356	1,378	1,473	1,483	1,526	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: R1740, Air/Ocean Survey Engineering: The project engineering development for fleet transition of potential 6.3 sponsored projects of highly specialized ultra-high resolution instrumentation systems and measurement techniques in support of CNO endorsed requirements. The objectives are to ruggedize and package systems, sensors and instruments to survive the harsh and demanding requirements of fleet operational use. Engineering is accomplished in the Research, Development Test and Evaluation (RDT&E) phase to meet requirements for 1) air and safety certification for deployment from fleet aircraft or ships, and 2) proper data formats for integration into existing or planned communications and displays. The end products are ruggedized sensors and systems that will 1) provide the military near real-time, in-situ environmental assessment capability in littoral regions 2) field a capability to provide the regional commander with continuous environmental data for operational use, and 3) provide baseline data for predictive models in areas of potential interest. Real-time environmental data is needed because climatological forecasting does not work in the littoral. The major challenges include instrumentation for collection and dissemination of data in highly variable meteorological and oceanographic conditions under stressful environmental situations in denied or inaccessible areas over relatively long periods of time.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($849) Completed testing of Compact Meteorological and Oceanographic Drifter (CMOD) / Temperature Tail (TZ) /Ambient Noise Sensor (ANS) mini drifting data buoy (MDDB).
- (U) ($82) Initiated 6.4 transition of expendable optical probe from PE 0603207N.
- (U) ($250) Initiated 6.4 drifting buoy display software/PC card development for local user terminal upgrades.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: R1740
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Air/Ocean Survey Engineering

2. (U) FY 1995 PLAN:

- (U) ($1241) Continue development of combined 300 meter thermistor chain/ambient noise sensors for AN/WSQ-6 buoys (NAVY designator for MDDB). Begin transition of buoy procurement to NAVAIR PMA 264 for OT&E.

3. (U) FY 1996 PLAN:

- (U) ($800) AN/WSQ-6 Buoy Sensors. Transition XAN2 ambient noise variant to PMA 264. Continue development of XAN-4 variant, combined thermistor chain/hydrophone option.
- (U) ($229) Transition from 6.3 development new wind speed/direction sensor for AN/WSQ-6 buoy prototype.
- (U) ($227) Initiate 6.4 development of wave/wind sensor package for AN/WSQ-6 buoys.

4. (U) FY 1997 PLAN:

- (U) ($950) Continue sensor development on AN/WSQ-6 series buoys. Transition wave buoy variant to fleet.
- (U) ($222) Autonomous Unmanned Vehicle / Remotely Operated Vehicle (AUV/ROV) meteorological and oceanographic (METOC) Sensors; transition AUV/ROV sensors from 6.3 Ocean Measurement Sensors (OMS) program to 6.4 development for AUV/ROV applications.
- (U) ($184) Continue development of wave/wind sensor package for AN/WSQ-6 buoys.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: R1740
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Air/Ocean Survey Engineering

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,169	1,249		
(U) FY 1995 Appropriated:		1,249		
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	12	-8		
(U) FY 1996/97 PRESBUDG Submit:	1,181	1,241	1,256	1,356

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding available not adequate to transition more than one buoy variant per FY.,
FY 1994 - Increase of 12 for end-of-year execution.
FY 1995 - Decrease of 5 to accommodate Small Business Innovation Research and 3 to reflect undistributed reductions for travel and University Research.

(U) Schedule: Wind and wave sensors for buoys still in 6.3 and won't transition until FY96.

(U) Technical: Per Sponsor direction transition to PMA 264 in FY96 will begin with ambient noise version (XAN-2) with one buoy variant per year transition through FY98.

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

(U) OTHER RDT&E: PE 0602435N (Ocean and Atmospheric Technology)
PE 0603207N (Air/Ocean Tactical Applications)

D. (U) SCHEDULE PROFILE: Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: R1740
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Air/Ocean Survey Engineering

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	585	621	618	685
b. Developmental Test & Evaluation	442	458	472	496
c. Program Management Support	139	145	149	155
d. Travel	15	17	17	20
Total	1,181	1,241	1,256	1,356

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: Not Applicable

C. (U) FUNDING PROFILE: Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X1752 TACTICAL ENVIRONMENTAL SUPPORT SYSTEM - TESS (ENG)	1,202	2,327	2,304	2,413	2,323	2,831	2,858	2,942	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops improvements to the Navy's computer-based tactical shipboard and shore capability used to predict and assess the impact of the atmospheric and oceanographic environment on the performance of platforms, weapons and sensor systems. Pre-Planned Product Improvement (P3I) provides for the testing of newly developed application software to meet the evolutionary requirements of the fleet and also enable TESS to maintain compatibility with common software standards and operating environments.

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($368) Continued NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($324) Completed Phase I software build integration. Began integration of Phase II software build in accordance with the TESS(3) Software Integration Plan (SIP).
- (U) ($188) Continued software and hardware P3I. Complete engineering development of interim TESS(3) remote workstation.
- (U) ($322) Began integrating X-Windows software implementation in interim remote workstation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering
PROJECT NUMBER: X1752
PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

2. (U) FY 1995 PLAN:

- (U) ($631) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($808) Complete Phase II software build integration. Begin integration of Phase III software build in accordance with the TESS(3) SIP.
- (U) ($638) Continue software P3I. Begin engineering development of next generation TESS(3) hardware suite.
- (U) ($250) Complete X-Windows implementation.

3. (U) FY 1996 PLAN:

- (U) ($685) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($436) Complete integration of Phase III software build in accordance with the TESS(3) SIP.
- (U) ($633) Begin integration of Phase IV software build in accordance with the TESS(3) SIP.
- (U) ($550) Begin convergence of TESS(3) and NITES software.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X1752
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

4. (U) FY 1997 PLAN:

- (U) ($790) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($525) Complete integration of Phase IV software build in accordance with the TESS(3) SIP.
- (U) ($528) Begin integration of Phase V software build in accordance with the TESS(3) SIP.
- (U) ($570) Continue convergence of TESS(3) and NITES software.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,205	2,397		
(U) FY 1995 Appropriated:		2,397		
(U) Adjustments from Approp./FY95 PRESBUDG:	-3	-70		
(U) FY 1996/97 PRESBUDG Submit:	1,202	2,327	2,304	2,413

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X1752
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY95 decrease of $27K to accomodate Small Business Innovation Research and $43K to reflect undistributed reductions for University Research, consulting services and travel.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN line 4226	2,738	2,933	8,376	7,646	7,166	10,640	8,476	7,761	CONT.	CONT.

(U) RELATED RDT&E: PE 0603207N, Air/Ocean Tactical Applications.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering
PROJECT NUMBER: X1752
PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Engineering	1,102	2,227	2,204	2,334
b. Travel	100	100	100	79
Total	1,202	2,327	2,304	2,413

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering
PROJECT NUMBER: X1752
PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NRL	WX	Nov FY	CONT.	CONT.	7,655	565	710	993	1,023	CONT.	CONT.
NISE West	WX	Nov FY	CONT.	CONT.	0	397	1,142	1,086	1,130	CONT.	CONT.
Various	Various	Nov FY	CONT.	CONT.	150	130	325	75	110	CONT.	CONT.
Support and Management											
SSA/BAH	MR	Nov FY	CONT.	CONT.	4,733	110	150	150	150	CONT.	CONT.
Wash, DC 7/90											
Test and Evaluation											

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT NUMBER: X1752 PROJECT TITLE: Tactical Environmental Support System - TESS (ENG)

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	7,805	1,092	2,177	2,154	2,263	CONT.	CONT.
Subtotal Support and Management	4,733	110	150	150	150	CONT.	CONT.
Subtotal Test and Evaluation							
Total Project	12,538	1,202	2,327	2,304	2,413	CONT.	CONT.

C. FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604221N
PROGRAM ELEMENT TITLE: P-3 Modernization Program

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1152 P-3 Sensor Integration	5,055	4,995	1,945	2,801	2,786	2,473	2,549	2,632	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides upgrades to P-3C aircraft systems to enhance surface and subsurface tracking, classification, and attack capabilities. The P-3C Sensor Integration project develops software necessary to integrate advanced sensors into embedded P-3C Update III computer systems.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,951) Commenced coding and debugging of Tactical Mission Software (TMS) (software version A4.8).
- (U) ($2,054) Commenced coding and debugging of Broadband (software version C4.8) capability.
- (U) ($1,050) Exercised final option for OMNIBUS contract for systems engineering support.
- (U) ($0) Released Request For Proposal (RFP) to compete OMNIBUS contract.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

2. (U) FY 1995 PLAN:

- (U) ($3,092) Complete coding and debugging of TMS/Broadband (software version A4.8/C4.8).
- (U) ($1,050) Award OMNIBUS contract for systems engineering support.
- (U) ($853) Begin integration of TMS/Broadband (software version A4.8/C4.8).

3. (U) FY 1996 PLAN:

- (U) ($1,245) Complete integration of TMS/Broadband (software version A4.8/C4.8).
- (U) ($200) Begin Developmental Testing of TMS/Broadband (software version A4.8/C4.8).
- (U) ($500) Exercise option for Systems Engineering Support.

4. (U) FY 1997 PLAN:

- (U) ($2,301) Conduct Developmental and Operational Testing of TMS/Braodband (software version A4.8/C4.8).
- (U) ($500) Exercise option for Systems Engineering Support.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,952	5,392	xxx	xxx
(U) FY 1995 Appropriated:	xxx	5,392	xxx	xxx
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	+103	-397	xxx	xxx
(U) FY 1996/97 PRESBUDG Submit:	5,055	4,995	1,945	2,801

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 change of (+103K) reflects below threshold reprogramming.

FY95 change of (-397K) reflects CSS reduction of (-327K); travel reduction of (-7K); SBIR of (-55K) and university research reduction of (-8K).

(U) Schedule: TMS/Broadband and ADAR integration delays due to funding reductions.

(U) Technical: Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

C. (U) OTHER PROGRAM FUNDING SUMMARY: None

(U) RELATED RDT&E:

(U) PE 0604261N (Acoustic Search Sensors developing software and acoustic algorithms).

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones					4Q/98 ADAR CDR
T&E Milestones			4Q/TMS/Broadband DT III	3Q/TMS/Broadband OT III	1Q/02 ADAR DT III 3Q/02 ADAR OT III
Contract Milestones	4Q/OMNI RFP	1Q/OMNI AWD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering Support	3,945	3,885	1,185	0
b. Technical Support (CS)	1,050	1,050	500	500
c. Travel	60	60	60	60
d. Test and Evaluation	0	0	200	2,241
Total	5,055	4,995	1,945	2,801

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
RBC (Arl, VA)	C/FFP	8/89	4,894	4,894	3,844	1,050	0	0	0	0	4,894
RBC (Arl, VA)	C/FFP	11/94	TBD	7,350	0	0	1,050	500	500	5,300	7,350
Lab/Field Activity					3,456	1,694	2,669	828	0	CONT	CONT
Other contracts less than $1.0M					2,921	2,251	1,216	357	0	CONT	CONT
Support and Management											
Lab/Field Activity					89	60	60	60	60	CONT	CONT
Test and Evaluation											
Lab/Field Activity					0	0	0	200	2,241	CONT	CONT

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:	Not Applicable									
Support and Management:	Not Applicable									
Test and Evaluation:	Not Applicable									

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604221N PROJECT NUMBER: H1152
PROGRAM ELEMENT TITLE: P-3 Modernization Program PROJECT TITLE: P-3 Sensor Integration Program

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	10,221	4,995	4,935	1,685	500	CONT	CONT
Subtotal Support and Management	89	60	60	60	60	CONT	CONT
Subtotal Test and Evaluation	0	0	0	200	2,241	CONT	CONT
Total Project	10,310	5,055	4,995	1,945	2,801	CONT	CONT

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604231N | Date: Feb 1995
PROGRAM ELEMENT TITLE: Tactical Command System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2213 Mission Planning	0	0	2,635	2,599	2,424	13,738	25,797	16,174	CONT.	CONT.
X0486 TSC	4,290	4,361	3,004	3,327	3,211	3,420	3,455	3,587	CONT.	CONT.
X0709 NCCS (TFCC)	8,458	11,483	8,941	7,247	7,003	10,407	13,582	10,776	CONT.	CONT.
X2009 OBU/OSG	2,142	2,640	2,661	2,090	2,160	2,331	2,351	2,420	CONT.	CONT.
X2041 Operations Support System (OSS)	11,215	11,392	7,365	6,864	7,492	7,875	8,041	8,510	CONT.	CONT.
X0521 Shipboard Tactical Intelligence Processing (STIP)	4,720	4,812	2,783	4,903	5,329	6,487	6,575	6,687	CONT.	CONT.
X2215 JOINT INTEROPERABILITY	0	0	0	0	0	4,315	6,698	3,084	CONT.	CONT.
X2216 JOINT LITTORAL WARFARE (JWL)	0	0	0	0	0	7,353	29,134	15,391	CONT.	CONT.
TOTAL	30,825	34,688	27,389	27,030	27,619	55,926	95,633	66,629	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Command System (TCS) upgrades the Navy's Command Control, Computer and Intelligence (C3I) systems and processes C3I information for all warfare mission areas including planning, direction and reconstruction of missions for peacetime, wartime and times of crises. Included among these C3I systems are: the unified command centers of CINCPAC and CINCLANT, the Navy Command Center, the fleet command centers of CINCLANTFLT, CINCUSNAVEUR, the Submarine Operating Authority (SUBOPAUTH), command centers supporting the Ashore Sector Commander, the Fleet Ocean Surveillance Information Centers (FOSICS) and Fleet Ocean Surveillance Information Facilities (FOSIFS), Tactical Flag Command Center (TFCC) afloat and the command and control suites of various combatant ship classes. The TFCC and ship command and control suites have been consolidated in the Navy Tactical Command System - Afloat (NTCS-A)

program. C3I of Naval aircraft operations afloat and shore are supported by the TCS. Mission planning capabilities will be implemented for air control and attack operations using TCS components in the TAMPS program. All these projects develop information processing and display systems for afloat and ashore commanders providing decision makers the ability to make rapid, informed tactical decisions. TCS develops systems which fuse tactical data between shipboard organic sensors and ashore and space-based non-organic sensors. TCS provides the ashore and afloat pillars of the Copernicus architecture, the interoperability tenants of "C⁴I for the warrior" and supports the Global Command and Control System (GCCS) architecture. Additionally, TCS supports the Joint Maritime Command Information System (JMCIS) acquisition and development strategy for providing a standard/common operating environment to standardize operational and logistical support. Further, data from the Joint Tactical Information Distribution System (JTIDS), Joint Defense Intelligence Support Services (JDISS) and systems employing the Department of Defense Intelligence Information System (DODIIS) standards are used for the exchange of data with joint and combined forces. The Tactical Aircraft Mission Planning System (TAMPS) is the Naval standard unit level aircraft mission planning system and provides data loading capabilities for all-aviation platforms and subsystems. TAMPS is interoperable with and uses TCS components for data feed.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: These programs are funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2213 MISSION PLANNING	0	0	2,635	2,599	2,424	13,738	25,797	16,174	CONT.	CONT.

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

The Tactical Aircraft Mission Planning System (TAMPS) is the Naval standard unit level aircraft mission planning system. It loads data for the following aviation platforms and subsystems: F/A-18, F-14, E-2C, V-22, C-2, KC-130, EA-6B, AV-8B, AH-1, SH-60, MH-53, HH-60, CH-46, VH-1, E-6, ES-3A, P-3A/B, T-45, S-3B, P-3C, High-speed Anti Radiation Missile (HARM), Joint Stand-Off Weapon (JSOW), Joint Directed Attack Munitions (JDAM), Stand-off Land Attack Missile (SLAM), Stores Planning And Weaponeering Module (SPWM), Joint Tactical Information and Distribution System (JTIDS), Global Position System (GPS), ARC-210, ALE-47, ALR-45/50, ALR-67, ALE-39, ALQ-126B, Tactical Aircraft Moving Map System (TAMMS), Forward Area Minefield Planner (FAMP), Naval Special Warfare Mission Planning, and Coast Guard. TAMPS loads the F/A-18 Data Storage Unit (DSU) with route of flight data (way points, sequential steering files) air to air radar presets, Tactical Aircraft Navigation Aid (TACAN) and channel identification files. The DSU in turn provides this TAMPS information to the F/A-18 flight software. Without the TAMPS load of "independent overlays" for the aircraft software and bulk files for missile software, weapons such as SLAM, JSOW and JDAM will be unusable. TAMPS currently is the primary means of loading JTIDS data for the F-14D/E-2C. Future systems such as GPS are planned to use TAMPS for mission planning and data loads. In keeping with the Assistant Secretary of Defense C3I direction, TAMPS has been identified as a migration system. Various platform specific aircraft mission planning systems (e.g., Tactical EA-6B Mission Support System (TEAMS), Map Operator and Maintenance (MOMS), Common Helicopter Aviation Mission Planning System (CHAMPS), MOMS/AV-8B Maintenance Data System, ES-3 Mission Planning System, Tactical Electronical Reconnaissance Processing and Evaluation System (TERPES) are planned to neck down into TAMPS. TAMPS is interoperable with and uses the Joint Maritime Command Information System (JMCIS) for data feeds.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS PROJECT TITLE: MISSION PLANNING

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: N/A

2. (U) FY 1995 PLAN: N/A

3. (U) FY 1996 PLAN:

Unit-Level Mission Planning

• (U) ($2,635) Develop and integrate TAMPS software upgrade 6.1. Efforts to include: Capability to scan Mapping products; ability to process Intelligence Data Base in Standard Extract Format; study and develop the requirements to integrate with platforms (i.e., ARC-210, F-14, E-2C improvements, and ALE-47); computer based training; training scenarios; automatic route construction; and full duplex security. Continue TAMPS 7.0 architecture studies to integrate TAMPS into the Joint Maritime Command Information System (JMCIS) and Global Command and Control System common operating environment.

TAMPS has a software release strategy which accommodates major and minor releases. A minor release (i.e. TAMPS 6.1, 6.2) is defined as a set of software requirements that does not drive design changes to external Mission Planning Modules (MPMs), but is required to integrate new weapon system and stovepipe mission planning systems. TAMPS plans to conduct annual minor software releases.

A major release (i.e. TAMPS 7.0) is defined as a set of changes to the core TAMPS software architecture that further drive software design changes to external weapon system application modules. Although the basic mission planning functions of TAMPS still exist, a major release is required to implement emerging technology that exceed the existing TAMPS software capabilities but meet fleet requirements (i.e. B1/B2 security, dynamic MPM-MPM communication, etc.). Major software releases will occur approximately every three years.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS PROJECT TITLE:MISSION PLANNING

4. (U) FY 1997 PLAN:

Unit-Level Mission Planning
●($2599) Develop and integrate TAMPS 6.2. Efforts to include the integration of: SPWM; TAMM functionality; Air-to-Air Warfare module; Electronic Warfare module; JDAM mission planning interface; system security; and ARC-210 full capability for satellite communication interface. Design TAMPS 7.0 software architecture to integrate TAMPS into the JMCIS and GCCS common operating environment, and to interface with the Digital Imagery Workstation to provide support for Precision Guided Munitions.

B. (U) PROGRAM CHANGE SUMMARY:

	FY1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget: N/A				
(U) FY 1995 Appropriated: N/A				
(U) Adjustments from Appropriated/FY 1995 PRESBUDG: N/A				
(U) FY 1996/97 PRESBUDG Submit:	0	0	2,635	2,599

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 96 IS FIRST YEAR OF RDT&E FUNDING

(U) Schedule: N/A

(U) Technical: N/A

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS PROJECT TITLE:MISSION PLANNING

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LINE 166	13,707	9,415	5,013	9,061	7,755	13,440	23,736	18,664	CONT	CONT
(U) O&MN	1,375	1,441	2,155	2,551	3,089	5,131	5,627	5,571	CONT	CONT

(U) RELATED RDT&E:

(U) PE 0204229N (TOMAHAWK)
(U) PE 0604231N (NTCS-A)

D.(U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		1Q MS IIIB 3Q MS IIIC	3Q MS IIID	3Q MS IIIE	
Engineering Milestones					
T&E Milestones					
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS PROJECT TITLE: MISSION PLANNING

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. SOFTWARE DEVELOPMENT	0	0	2,635	2,599
Total	0	0	2,635	2,599

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEMS PROJECT TITLE: MISSION PLANNING

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands): **NOT APPLICABLE**

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Support and Management											
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

C. (U) FUNDING PROFILE: **NOT APPLICABLE**

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5
Date: Feb 1995

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0486	4,290	4,361	3,004	3,327	3,211	3,420	3,455	3,587	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Support Centers are nodes of the Navy Command and Control System (NCCS) Ashore, with fixed sites and mobile components (Mobile Operations Control Center (MOCCs)) provide the Maritime Sector Commander (Ashore) with the capability to plan, direct and control the tactical operations of joint and Naval Expeditionary Forces and other assigned units within his respective area of responsibility. These operations include littoral and open ocean surveillance, anti-surface warfare, over-the-horizon targeting, counter-drug operations, power projection, antisubmarine warfare, mining, search and rescue, and special operations. TSCs consist of C^{4}I systems (based on the Joint Maritime Command Information System (JMCIS) common architecture); air-ground, satellite and point-to-point communications systems; sensor analysis capabilities; avionics and weapons system interfaces and facilities equipment. MOCC is a rapidly-deployable, self-contained, take-what-you-need C^{4}I system which can be transported in two fleet-configured P-3 aircraft for contingency operations. The ongoing TSC C^3 Modernization (TSM) Program will: support expeditionary warfare requirements; replace a centralized computer system with Navy-standard desktop computers and a distributed data base on a local area network to provide a fused, all-source tactical data display with detailed source data and relevent tactical decision/planning aids; provide ELINT, imagery and ACINT sensor analysis capabilities; automate communications functions/interfaces and facilitate rapid data exchange with key Navy, joint, other service and allied forces ashore, afloat and airborne; and develop automated interfaces to evolving tactical weapons/sensor/ avionics systems and additional USN/USAF/allied aircraft. This program assures the existing TSC system remains interoperable with updated aircraft, sensors and weapons systems.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5

Date: Feb 1995

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($25) Continued United States Message Text Formats (USMTF) pre-certification interoperability testing.
- (U) ($196) Completed DTIIA and update the TMS at TSC Brunswick to an operational test configuration.
- (U) ($1,111) Integrated TMS 1.0 at all TSC sites with site-specific communications interfaces.
- (U) ($241) Integrated selected TMS 1.0 software components into a modular configuration which can be used to support TSC forward basing requirements (MOCCs).
- (U) ($29) Conducted T&E of TSC Components in a MOCC configuration.
- (U) ($37) Completed the Defense Message System (DMS) Component Approval Process (CAP) for AUTODIN interface.
- (U) ($45) Achieved interoperability certification for OTH-T/Gold and USMTF message processing.
- (U) ($110) Complete a systems requirements review and systems design review Increment II (TMS 2.0).
- (U) ($164) Developed common JMCIS software updates, in conjunction with other programs.
- (U) ($282) Captured/integrated data server updates and anti-submarine warfare tactical decision aids.
- (U) ($266) Continued automation of message processing to support AUTODIN, air-to-ground, point-to-point and SATCOM connectivity.
- (U) ($324) Developed/integrated tactical planning, Preflight Insertion Data (PID), aircrew brief and mission replay interfaces and interoperability updates for improved aircraft support.
- (U) ($246) Continued development of Sensor Analysis Stations (Inverse Synthetic Aperture Radar (ISAR), Electronic Warfare Support Measures (ESM), Imagery).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0486 Date: Feb 1995
PROGRAM ELEMENT TITLE: Tactical Command System BUDGET ACTIVITY: 5

- (U) ($139) Completed integration of tactical computer-based Link 11 software module and obtain certification on TAC-3.
- (U) ($972) Completed systems integration, testing, documentation of Incremental Release i.0.5 to provide: message processing updates, tactical decision aids updates, aircraft interface updates, integrated Link 11 capability, automation of PID and generic mission replay development as applications of the JMCIS Unified Build.
- (U) ($45) Began OTIIA at TSC Brunswick.
- (U) ($58) Conducted security certification and support accreditation of Increment I, TMS Release 1.0.

2. (U) FY 1995 PLAN:

- (U) ($65) Complete OTIIA at TSC Brunswick leading to a Milestone IIIA (Q1 FY95) decision for Fleet Release of TMS 1.0 (i.0.5.x).
- (U) ($362) Install Incremental Release 1.X at TSC sites (as part of Milestone IIIA decision).
- (U) ($201) Develop common JMCIS software updates, in conjunction with other programs.
- (U) ($665) Upgrade data server to: operate on a TAC-3; include additional USMTF, Link 11 message data, technical data (ESM, acoustic, Naval Tactical Data Base (NWTDB)); capture and apply trusted software technology, if available.
- (U) ($244) Capture/integrate tactical decision aids updates.
- (U) ($376) Develope/integrate a TMS Local Area Network (LAN) interface to the Fast Time Analysis System (FTAS--acoustic processor) for improved post mission data analysis and reconstruction.
- (U) ($264) Start to develop/integrate an ESM Analysis Workstation.
- (U) ($201) Start to develop/integrate Tactical Environmental Support System (TESS) interface.
- (U) ($93) Capture/integrate a Common User Data Information Exchange System (CUDIXS) interface capability.
- (U) ($269) Continue development/integration of communications automation to include an integrated technical

control capability.

- (U) ($1,197) Begin system integration, testing, documentation, training for Objective II (Incremental Fleet Release i.1.2) to incorporate updated mission planning, communication, and post mission analysis capabilities, as well as interoperability among post-mission analysis, aircrew brief, PID, and tactical planning modules in both TSC and MOCC configurations.
- (U) ($390) Conduct DT IIB and update TSC Brunswick to an operational text configuration.
- (U) ($34) Provide security certification of Incremental Release 2.0.

3. (U) FY 1996 PLAN:

- (U) ($130) Update common JMCIS software, in conjunction with other programs.
- (U) ($463) Continue to upgrade data server to operate on standard tactical computer workstations; include additional USMTF, Link 11 message data, and technical data (Electronic Warfare Support Measures (ESM), acoustic, NWTDB).
- (U) ($167) Capture/integrate tactical decision aids updates.
- (U) ($67) Capture and apply available trusted software technology and improvements.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5
Date: Feb 1995

- (U) ($249) Update TMS Local Area Network (LAN) interface to the FTAS for improved post-mission data analysis and reconstruction.
- (U) ($134) Update ESM Analysis Workstation functionality in TMS software.
- (U) ($101) Update Tactical Environmental Support System (TESS) interface as required.
- (U) ($1,409) Continue system integration, testing, documentation, training for Increment II (Incremental Fleet Release 2.0) to incorporate updated mission planning, communication, and post mission analysis capabilities, as well as interoperability among post-mission analysis, aircrew brief, PID, and tactical planning modules in both TSC and MOCC configurations.
- (U) ($54) Continue incorporation of CUDIXS and Ground-to-Air Voice interfaces into MOCC configuration.
- (U) ($63) Incorporate updates in LAN connectivity in the MOCC.
- (U) ($38) Support security accreditation of Incremental Release 2.0.
- (U) ($129) Support OT IIB leading to a Milestone IIIB decision (Q3) for Fleet Release of TMS 2.0.

4. (U) FY 1997 PLAN:

- (U) ($184) Update common JMCIS software, in conjunction with other programs.
- (U) ($619) Continue to upgrade data server to operate on standard tactical computer workstations; include additional USMTF, Link 11 message data, and technical data ESM, acoustic, NWTDB).
- (U) ($202) Capture/integrate tactical decision aids updates.
- (U) ($84) Continue to capture and apply available trusted software technology.
- (U) ($323) Update TMS Local Area Network (LAN) interface to the FTAS for improved post mission data analysis and reconstruction.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5
Date: Feb 1995

- (U) ($209) Update ESM Analysis Workstation functionality in TMS software.
- (U) ($856) Continue system integration, testing, documentation, training for Increment II (Incremental Fleet Release 2.0) to incorporate updated mission planning, communication, and post mission analysis capabilities, as well as interoperability among post-mission analysis, aircrew brief, PID, and tactical planning modules in both TSC and MOCC configurations.
- (U) ($232) Develop or adapt a TADIXS B interface to the TSC software.
- (U) ($413) Develop system achievement of major effectiveness parameters of the OR in areas of mission-supported and communications system performance for Increment III.
- (U) ($67) Complete security certification and support security accreditation for Incremental Release 3.0.
- (U) ($138) Complete DTIIC and update the TSC at Brunswick to an operational test configuration; support OT IIC leading to a Milestone IIIC decision (Q1 FY98) for Fleet Release of TMS 3.0.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,290	4,538		
(U) FY 1995 Appropriated:		4,538		
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:		-177		
(U) FY 96/97 PRESBUDG Submit:	4,290	4,361	3,004	3,327

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5
Date: Feb 1995

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 was decreased by -177K; of this, 71K was for Small Business Innovative Research and 106K reflected Undistributed Reductions for University Research, Consulting Services and Travel.

(U) Schedule: Program terminology and milestones realigned to reflect approved funding change. DTIIA and OTIIA were delayed three months. Associated MSIIIA delayed to Q3, FY95, due to date of availability of the JMCIS core software.

(U) Technical: None.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
• (U) OPN LI 2246	6,564	3,290	8,358	10,554	7,410	9,088	8,998	9,233	CONT.	CONT.
• (U) OPN LI 2906 (Subset)	1,789	1,417	1,411	1,493	4,100	3,802	3,648	3,787	CONT.	CONT.
• (U) OMN AG/SAG 1C1C	7,365	6,855	7,190	7,842	7,972	7,232	7,790	7,980	CONT.	CONT.
• (U) OMN AG/SAG 4B7N	4,387	2,854	3,433	3,923	3,961	3,671	3,755	3,833	CONT.	CONT.
• (U) MIL CON PROJ P-209	0	9,850	0	0	0	0	0	0	0	9,850

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5

Date: Feb 1995

(U) RELATED RDT&E:

- (U) PE 0604261N: (Acoustic Search Sensors): TSC maintains interoperability with S-3 weapon systems and future improvements.
- (U) PE 0604221N: (P-3 Modernization): TSC maintains interoperability with, and fully supports P-3 system changes and enhancements.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		Q2 IIIA	Q3 IIIB		CONT.
Engineering Milestones	Q1 ORE	Q1 MOCC Q2 ORE TMS 2.0 CDR	Q3 TMS REL 2.0	Q1 TMS REL 3.0 CDR	CONT.
T&E Milestones		Q2 DTIIA Q3 OTIIA Q4 DT IIB	Q1 OTIIB	Q2 DTIIC Q4 OTIIC	CONT.
Contract Milestones					

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5
Date: Feb 1995

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	479	389	401	413
b. Software Engineering	2,589	2,655	1,705	1,936
c. Hardware Analysis/Design	417	439	294	329
d. Hard-/Software Integration	770	813	549	604
e. Test & Evaluation	35	65	55	45
Total	4,290	4,361	3,004	3,327

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NISE, E STI*					8,658	2,916	3,139	1,953	2,205	Cont.	Cont.
Other Contracts					1,640	860	768	595	664	Cont.	Cont.
Support and Management											
Other Contracts					1,391	479	389	401	413	Cont.	Cont.
Test and Evaluation											
OPTEVFOR					212	35	65	55	45	Cont.	Cont.

*NOTE: This line is total effort by this single field activity. No single contract exceeds $1.0M

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0486
BUDGET ACTIVITY: 5

Date: Feb 1995

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development		3,776	3,907	2,548	2,869	Cont.	Cont.
Subtotal Support and Management		479	389	401	413	Cont.	Cont.
Subtotal Test and Evaluation		35	65	55	45	Cont.	Cont.
Total Project		4,290	4,361	3,004	3,327	Cont.	Cont.

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0709 NTCS-A	8,458	11,483	8,941	7,247	7,003	10,407	13,582	10,776	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Navy Tactical Command System-Afloat (NTCS-A) program consolidates the formerly identified Tactical Flag Command Center (TFCC), Afloat Correlation System (ACS), Electronic Warfare Coordination Module (EWCM), Prototype Ocean Surveillance Terminal (POST), Joint Operational Tactical System (JOTS), and Naval Intelligence Processing System (NIPS) programs and provides a tactical command, control, communications, computers and intelligence (C^4I) system to U. S. Navy Ships under a single unifying architecture called JMCIS (Joint Maritime Command Information System). NTCS-A provides the TFCC pillar of the Copernicus Architecture to Joint Task Force Commanders (JTFC), Numbered Fleet Commanders (NFC), Officers in Tactical Command (OTC), Composite Warfare Commanders (CWC), Subordinate Warfare Commanders (SWC), Commander Amphibious Task Force (CATF), Commander Landing Force (CLF), and Commanding Officers/Tactical Action Officers (CO/TAO). It also integrates both joint and service-unique command and control projects in order to support joint task force and Navy afloat requirements. Efforts include design, integration, and test of Tactical Decision Aids (TDAs) and Tactical Intelligence Analytical Aids (TIAAs), in a multi-level secure mode to provide the Battle Group/Force Commanders with warfighting Command and Control capabilities. The Theatre Ballistic Missile Defense (TBMD) Program is being developed to support USACOM's Joint Task Force 95 exercise onboard USS EISENHOWER, USS MT WHITNEY, USS LASALLE, and at U.S. Army Command.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,320) Continued to support the tenets of the Copernicus Architecture, C^4I for the Warrior and the Global Command and Control System by fully developing and implementing the open systems architecture support as consolidation of C^2 programs into NTCS-A. Investigated the architecture necessary to support distributed data base access to all fleet users to support the "Pull" tenet of the Architectures.
- (U) ($200) Completed development of downsized JOTS. Tested downsized JOTS at sea and in the field.
- (U) ($1,760) Developed integration and testing of the FY 1994 unitary software base (OPEVAL UB 2.0).
- (U) ($640) Continued to develop C^4I TDAs and conducted advanced integration testing.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

- (U) ($538) Continued to integrate additional video source information into NTCS-A. Initiated integration of all digital imagery products such as TAMPS, DS, JDISS and PIES into an Imagery LAN based on NTCS-A Imagery Exploration Workstation (NIEWS) architecture. Initiated software development to incorporate multi-media (i.e., imagery, audio and cable grade video) capability into workstation.

- (U) ($1,100) Continued development of (C^2WC) Command, Control Warfare Commander and Cryptologic support and analysis.

- (U) ($150) Continued the incorporation of necessasry aspects of multi-level security in the NTCS-A system.

- (U) ($500) Continued NTCS-A/Joint Maritime Command Information System (JMCIS) development to include full SCI JOTS/NIPS. Merged functionality and video distribution capabilities of closed circuit TV into NTCS-A. Test NTCS-A/JMCIS at sea and complete the integration of CCTV.

- (U) ($640) Integrated functionality of Cryptologic Combat Work Station (CCWS) into NTCS-A.

- (U) ($120) Initiated integration of USMC Extended Position Location Reporting System (EXPLRS) into NTCS-A/JMCIS.

- (U) ($490) Initiated development of advanced TDAs in Anti-Air Warfare (AAW).

- (U) ($1000) Provided theater ballistic Misslie early indications and warning in the projected impact area.

2. (U) FY 1995 PLANS:

- (U) ($1,605) Develop, integrate and test the FY 1995 software release.

- (U) ($1,000) Initiate development of Artificial Intelligence (AI) analysis tools for incorporation into GENSER and SCI software for analyst workstations.

- (U) ($1,290) Complete development and integration of Crypotologic Combat Support software tools.

- (U) ($200) Incorporate advanced mapping and geodesy capabilities into NTCS-A.

- (U) ($1,838) Continue the incorporation of necessary aspects of multi-level security within the NTCS-A system.

- (U) ($1,500) Continue development of the architecture necessary to support distributed world-wide database access to all fleet users to support the "PULL" tenet of the Copernicus Architecture.

- (U) ($4,050) Initiate integration of Marine Corps, USAF and other joint intelligence systems into NTCS-A/JMCIS to meet DOD standardization requirements.

3. (U) FY 1996 PLAN:

- (U) ($1,233) Develop, integrate and test FY 1996 software release.

- (U) ($726) Continue development of Artificial Intelligence (AI) analysis tools for incorporation into GENSER and SCI software for analyst workstations.

- (U) ($2,172) Develop and implement segment applications software in an open systems architecture to include integration of joint C4I requirements working toward a common/consistent joint tactical picture consistent with JCS mandated GCCS standards.

- (U) ($454) Refine the Joint Force Air Component Command (JFACC) interfaces to JMCIS.

- (U) ($998) Continue integration and test of multi-level security capabilities in the NTCS-A system.

- (U) ($1,089) Continue development of the architecture to support world wide data base access to all fleet users to support the "PULL" tenet of the Copernicus Architecture and joint C4I for the warfighter.

- (U) ($907) Continue investigation and development of Marine Corps, Coast Guard, USAF and other Joint Command Control, Intelligence and Imagery systems interfaces with NTCS-A/JMCIS to meet DOD standardization requirements.

- (U) ($635) Procure development hardware to support hardware evaluation and software development.

- (U) ($727) Develop and test computer based training (CBT) modules for newly developed segment applications software.

4. (U) FY 1997 PLAN:

- (U) ($1,065) Develop integrate and test FY 1997 software release.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

- (U) ($437) Continue development of Artificial Intelligence (AI) analyses tools for incorporation into GENSER and SCI software for analyst workstations.
- (U) ($1,890) Continue development and implementation of segment applications software in a GCCS compliant open system architecture to include integration of joint C'I requirements working toward a common/consistent joint tactical picture.
- (U) ($509) Implement and test Joint Force Air Component Commander (JFACC) hardware and software interfaces with NTCS-A/JMCIS.
- (U) ($800) Continue integration and test of multi-level security capability in the NTCS-A/JMCIS system.
- (U) ($873) Continue to develop the architecture to support world wide data base access to all fleet users to support the full tenet of the Copernicus Architecture.
- (U) ($727) Continue investigation and development of Marine Corps, Coast Guard and other Joint Command, Control, Intelligence and Imagery systems interface with NTCS-A/JMCIS to meet DOD standardization requirements.
- (U) ($437) Procure development hardware to support hardware evaluation and software development.
- (U) ($509) Develop and test Computer Based Training (CBT) modules for newly developed segment applications.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	7,458	11,798		
(U) FY 1995 Appropriated:		11,798		
(U) Adjustments from Appropriated/FY95 President's Budget	1,000	-315		
(U) FY 1996/97 PRESBUDG Submit:	8,458	11,483	8,941	7,247

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The FY94 funding increase in FY 1994 ($1,000K) to allow for the development and demonstration of a JMCIS Theater Ballistic Missile Defense (TBMB) segment and wide-area network using SHF Satellite Communications. The funding reductions in FY 1995 to accommodate SBIR ($-178) Travel, ($-16), CSS Reduction ($-102) and a University Research reduction of ($-19).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LINE 2608	38,848	21,739	15,330	31,698	15,209	19,137	19,192	19,939	CONT.	CONT.
(U) O&MN	10,230	8,794	10,372	11,609	10,269	11,428	11,713	11,995		

(U) RELATED RDT&E: PE 0604231N (Tactical Command Systems) Shipboard Tactical Intelligence Processing

D. (U) SCHEDULE PROFILE:

	FY 1994				FY 1995				FY 1996				FY 1997				TO COMPLETE			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones			MS-IIIC				MS-IIID				MS-IIIE				MS-IIIF				CONT.	
Engineering Milestones			S/W UPDATE				S/W UPDATE				S/W UPDATE				S/W UPDATE				CONT.	
T&E Milestones			DT-IIC1,D OT-IIC1 D				DT-IIE OT-IIE				DT-IIF OT-IIF								CONT.	
Contract Milestones			EXERCISE OPTION				EXERCISE OPTION				EXERCISE OPTION				EXERCISE OPTION				CONT.	

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. PROJECT MANAGEMENT	350	341	356	396
b. SYSTEMS ENGINEERING	3,177	3,357	2,023	730
c. SOFTWARE DEVELOPMENT	4,831	7,685	5,849	5,620
d. HARDWARE DEVELOPMENT	0	0	622	428
e. SYSTEM TEST & EVALUATION	100	100	91	73
Total	8,458	11,483	8,941	7,247

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
CLASSIFIED/ NAVSUP	VAR	12/93 Options	16,122	16,122	4,536	2,507	1,830	2,802	2,509	Cont.	Cont.
ALL OTHER CONTRACTS	VAR				781	1,475	4,718	2,910	2,655	Cont.	Cont.
IN HOUSE/LABS					1,071	4,026	4,494	2,782	1,614	Cont.	Cont.
Support and Management					298	350	341	356	396	Cont.	Cont.
Test and Evaluation					183	100	100	91	73	Cont.	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM

PROJECT NUMBER: X0709
PROJECT TITLE: NTCS-A

GOVERNMENT FURNISHED PROPERTY - Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Total Delivery Date	FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development				6,388	8,008	11,042	8,494	6,778	Cont.	Cont.
Subtotal Support and Management				298	350	341	356	396	Cont.	Cont.
Subtotal Test and Evaluation				183	100	100	91	73	Cont.	Cont.
Total Project				6,869	8,458	11,483	8,941	7,247	Cont.	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: TACTICAL COMMAND SYSTEM PROJECT TITLE: NTCS-A

C. (U) FUNDING PROFILE: Not applicable.

C. 1. (U) FISCAL YEAR OBLIGATION/EXPENDITURE ACTUALS AND PLANS (BY QUARTER) ($ in thousands): Not applicable.

C. 2. (U) FY 1994 OBLIGATIONS/EXPENDITURES ($ in thousands): Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: ' Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2009 OSIS BASELINE UPGRADE (OBU)	2,142	2,640	2,661	2,090	2,160	2,331	2,351	2,420	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Ocean Surveillance Information System (OSIS) Baseline Upgrade (OBU) development is a subsystem of the Navy Command and Control System (NCCS) Ashore. OBU provides for the analysis of intelligence information from multiple sources to produce a comprehensive report of foreign forces and potential hostile activity. The system is required to be able to generate multiple, automated near-real-time event-by-event (NRT EBE) data streams at various classification/releasability levels, tailorable to unique customer requirements and capable of being transmitted over multiple communications paths (including DSNET) simultaneously. In addition, it is required to provide near-real-time (NRT) all-source fusion, correlation and analysis tools (including robust graphics presentation and geospatial analysis capabilities), directly feeding automated reporting capabilities. OSIS provides positional data and operational intelligence to commanders at all levels. It consists of two Joint Intelligence Centers, one Joint Intelligence Center Detachment, and one Fleet Ocean Surveillance Information Facility (FOSIF), a software support activity, and a training site. OBU functions encompass establishing and maintaining characteristics and performance data on hostile weapons platforms systems, collecting non-organic data from ashore and afloat sensors, developing an all-source tactical picture, and analyzing intelligence information. The data derived from this process is disseminated as an Operation Intelligence (OPINTEL) product to the operating forces for tactical threat warnings, decision making support, and support of Over-the-Horizon-Targeting.

(U) OBU uses the Joint Logistics Commander's Guidance of March 1987 on Evolutionary Acquisition (EA) as the strategy for future software development which includes a plan for incremental achievement of desired capability building on the core system provided by OBU Phases I and II. The OBU Phase III EA strategy will provide a mechanism for adding future capabilities including the incorporation of proven fleet initiated prototypes.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSIS Baseline Upgrade (OBU)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:
   - (U) ($50) Conducted DT-IID for major OBU upgrades.
   - (U) ($100) Conducted OT-IID for major OBU upgrades.
   - (U) ($500) Continued to develop prototype and update baseline.
   - (U) ($300) Continued evaluation of prototype functional enhancements.
   - (U) ($400) Completed workstation upgrade.
   - (U) ($292) Continued Phase III software development.
   - (U) ($500) Commence transition to file server architecture.
2. (U) FY 1995 PLAN:
   - (U) ($400) Continue to develop prototype and update baseline.
   - (U) ($355) Continue evaluation of prototype functional enhancements.
   - (U) ($300) Continue Phase III software development.
   - (U) ($650) Continue transition to file server architecture.
   - (U) ($300) Address OT-IID discrepancies.
   - (U) ($635) Begin software development to meet Joint interoperability standards.
3. (U) FY 1996 PLAN:
   - (U) ($350) Conduct DT-IIE and OT-IIE for major OBU upgrades.
   - (U) ($1,438) Continue to develop and prototype software to evolve baseline to a secure UNIX environment.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSIS Baseline Upgrade (OBU)

- (U) ($650) Develop software to interoperate with Joint customers.
- (U) ($223) Continue to evaluate prototypes for incorporation into baseline.

4. (U) FY 1997 PLAN:

- (U) ($1,750) Complete development of software required to evolve baseline to a secure UNIX environment.
- (U) ($340) Continue to evaluate prototypes for incorporation into baseline.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,142	2,743		
(U) FY 1995 Appropriated:		2,743		
(U) Adjustments from PRESBUDG:		-103		
(U) FY 1996/97 OSD/OMB Budget Submit:	2,142	2,640	2,661	2,090

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The funding reductions in FY 1995 are to accomodate a University Research reduction ($-4K), CSS Reduction ($-48K), Travel ($-3K), 1995 SBIR ($-48K).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN LI#2906	294	2,704	572	176	281	442	551	611	CONT.	CONT.
OMN 1C1C/4B7N	2,346	2,713	2,553	2,371	2,142	1,656	1,356	1,353	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSIS Baseline Upgrade (OBU)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program		ARB		ARB	CONT.
Milestones		NPDM		NPDM	CONT.
Engineering Milestones	SDR	SDR	SDR	SDR	CONT.
T&E	DT-IID		DT-IIE		CONT.
Milestones	OT-IID		OT-IIE		CONT.
Contract Milestones	N/A	N/A	N/A	N/A	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROGRAM ELEMENT TITLE: Tactical Command System PROJECT NUMBER: X2009 PROJECT TITLE: OSIS Baseline Upgrade (OBU)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. SYSTEMS ENGINEERING	522	635	650	710
b. SOFTWARE DEVELOPMENT	1470	1855	1861	1230
c. SYSTEM TEST AND EVALUATION	150	150	150	150
Total	2142	2640	2661	2090

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development					1,050						
NAVSUP	RADIUS	12/93				1,343					
OTHER		OPTIONS				127	1,855	1,861	1,230	CONT.	CONT.
Support and Management											
OTHER	WX				1,417	522	635	650	710	CONT.	CONT.
Test and Evaluation											
OPTEVFOR	PD				150	150	150	150	150	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSIS Baseline Upgrade (OBU)

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	1,050	1,470	1,855	1,861	1,230	CONT.	CONT.
Subtotal Support and Management	1,417	522	635	650	710	CONT.	CONT.
Subtotal Test and Evaluation	150	150	150	150	150	CONT.	CONT.
Total Project	2,617	2,142	2,640	2,661	2,090	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2041 OSS	11,215	11,392	7,365	6,864	7,492	7,875	8,041	8,510	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chief of Naval Operations (CNO), Fleet Commanders in Chief (CINCs) and Unified Commanders (USCINCLANT and USCINCPAC) require a single, integrated command and control system at the Navy Command Center (NCC), Fleet Command Centers (FCC), and the Unified Command Centers, respectively, to receive, process, display and assess the readiness and disposition of own, neutral, and potentially hostile forces. The OSS Program uses the Joint Logistics Commanders Guidance of March 1987 on Evolutionary Acquisition (EA) as the strategy for development. The EA concept includes a plan for incremental achievement of desired capability, early fielding of initial incremental operational capability and continual feedback from the users. OSS Increment I integrates existing prototype command center support systems on a Local Area Network (LAN) and provides a baseline command center support capability to designated OSS sites. Increment II will develop an integrated, logistically supportable, and cost effective single system, which includes Ocean Surveillance Information System (OSIS) Baseline Upgrade (OBU) interface, Navy Worldwide Military Command and Control System (WWMCCS) Software Standardization (NWSS) replacement, Status of Forces data (Status of Readiness and Training System (SORTS), Casualty Reporting (CASREP), Movement Reporting (MOVREP), and Employment Scheduling (EMPSKD)) current system functionality improvement, and latest state-of-the-art Commercial Off The Shelf (COTS) technologies to local as well as remote users. Increment III will transition Shore Targeting Terminal (STT) and Force High Level Terminal (FHLT) functionality to OSS and will incorporate Employment Scheduling System (ESS) and Information Presentation and Distribution System (IPDS) capabilities. Increment IV (FY 96-99) will continue the evolutionary development of OSS in response to emergent Joint and Navy C⁴I requirements, the changing threat and new technology. Multi-Level Security (MLS) features will be incorporated as they become commercially available. International, as well as intra and inter-service Command, Control, Communication and Computer integration, will be established and achieved through the implementation of OSS at selected NATO and U.S. Navy sites and Unified Commands. OSS is being developed and implemented in conjunction with the open system C⁴I For The Warrior (C⁴IFTW), Global Command and Control System (GCCS) and Joint Maritime Command Information System (JMCIS) architectures.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,750) Incrementally tested and fielded Release 93-1 containing CASREP, MOVREP, SORTS and EMPSKD features as well as priority NCRs from previous releases.
- (U) ($400) Completed design documents and implementation plans for completing the transition of NWSS to OSS.
- (U) ($250) Performed system engineering and software design and conducted Critical Design Reviews (CDRs) on remaining Increment II components to be included in future OSS/JMCIS releases.
- (U) ($1,454) Developed, tested and fielded incremental FHLT and STT capabilities at Shore ASW Command Centers (SACCs) and Submarine Operational Command Centers (SOCCs), respectively.
- (U) ($625) Developed and implemented a comprehensive scheduling capability as part of ESS for use by Fleet schedulers at the Type, Group and Unit Commander Level.
- (U) ($775) Performed system engineering and analysis to upgrade and extend the OSS LANs to a Government Open Systems Interconnnect Profile (GOSIP) compliant architecture in conjunction with IPDS.
- (U) ($1,650) Continued enhancing Unified Build software to satisfy OSS requirements; integrated successive UB versions into OSS baseline.
- (U) ($300) Integrated Tactical Decision Aids (TDAs) and Artificial Intelligence (AI) applications developed through other programs.
- (U) ($425) Continued IPDS development for other OSS sites.
- (U) ($275) Continued database integration and standardization efforts including architecture coordination, internal data content and format consolidation.
- (U) ($500) Participated in Global Command and Control System (GCCS) prototyping efforts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

- (U) ($450) Began design for complete OSS site inter-connectivity for Diagnostics, Software Code Transfer and other Data exchange.
- (U) ($335) Continued integrating TAC-3 products and state-of-the-art large screen displays, video switches and briefing technology into the OSS architecture.
- (U) ($1,221) Continued evolution of OSS into GCCS, C⁴IFTW and JMCIS architectures.
- (U) ($575) Conducted Navy and Joint Interoperability Certification Tests.
- (U) ($105) Explored requirements for expanding the scope of OSS to include additional Joint, Allied (NATO and other), Foreign (through FMS cases) and Navy users. Continued execution of Cooperative Development MOA with SACLANT.
- (U) ($125) Developed and implemented Joint requirements in support of the USCINCPAC Command Center Improvement Program (CCIP), Joint Crisis Management System (JCMS)/Joint Crisis Analysis Tools (JCAT) and Theater Command and Control System (TCCS).

2. (U) FY 1995 PLAN:

- (U) ($460) Conduct Developmental Testing, Interoperability testing and Operational Testing (OT-IIB) on OSS increment II (NWSS transition to OSS complete) and resolve outstanding deficiencies.
- (U) ($1,950) Complete development and testing of any remaining Increment II functionality required to satisfy outstanding Navy Command and Control Systems Change Requests (NCRs) and emergent user requirements. Release 95-1 will be the final Increment II release.
- (U) ($1,500) Continue developing, testing and fielding incremental FHLT, STT (OSS replacements) and ESS upgrades.
- (U) ($210) Explore requirements for expanding the scope of OSS to include additional Joint, Allied (NATO and other), Foreign (through FMS cases) and Navy users. Continue execution of Cooperative Development with SACLANT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

- (U) ($650) Continue to integrate/analyze OSS sites in conjunction with TAC-3/TAC-4 hardware upgrades, and state-of-the-art displays, video distribution systems and briefing aids (including multimedia, 3-D visualization and very high resolution images). Continue security engineering efforts.
- (U) ($1,250) Continue enhancing UB software to satisfy OSS requirements; integrate successive UB releases into OSS baseline.
- (U) ($2,488) Continue integrating OSS into the GCCS, C4IFTW, and JMCIS architectures.
- (U) ($750) Continue efforts to improve distribution of data between OSS sites, provide seamless access of disparate and separate databases, and improve the depth, quality and type of data available to OSS users.
- (U) ($685) Continue efforts to improve and extend OSS network throughout command center/headquarters at all OSS sites. Continue development of network prototypes, and perform modelling and analysis of LANs, Wide Area Networks (WANs) and Metropolitan Area Networks (MANs).
- (U) ($150) Commence efforts to incorporate super computer and/or parallel processor solutions into OSS to improve system performance.
- (U) ($150) Continue systems engineering and prototype development on AI/Expert System driven decision aids to provide real time decision making support to operational commanders.
- (U) ($724) Perform Navy and Joint Interoperability Certification Tests and resolve technical deficiencies.
- (U) ($175) Develop and upgrade joint requirements in support of the CCIP, JCMS/JCAT and TCCS.
- (U) ($250) Perform system engineering and analysis to upgrade the OSS LAN to a GOSIP compliant architecture in conjunction with IPDS.

3. (U) FY 1996 PLAN:

- (U) ($250) Conduct Developmental Testing and Beta Testing on OSS software releases.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

- (U) ($585) Continue developing, testing and fielding incremental FHLT, STT and ESS prototype upgrades to reach full functional baseline.
- (U) ($150) Develop integrated interface using a common architecture for OSS users to existing DOD Databases.
- (U) ($200) Continue to explore requirements for expanding the scope of OSS to include additional Joint, Allied NATO and other), Foreign (through FMS cases) and Navy users. Continue execution of Cooperative Development with SACLANT.
- (U) ($200) Continue implementation of appropriate MLS features.
- (U) ($300) Continue to integrate/analyze OSS sites in conjunction with COTS hardware upgrades, and state-of-the art displays, video distribution systems and briefing aids (including multimedia, 3-D visualization and very high resolution images). Continue security engineering efforts.
- (U) ($950) Continue enhancing Unified Build (UB) software to satisfy OSS requirements; integrate successive OSS releases into JMCIS baseline.
- (U) ($1,530) Maintain OSS/JMCIS architectural compatibility with GCCS, C^{4}I For the Warrior (C^{4}IFTW) and JMCIS.
- (U) ($150) Continue to develop and upgrade joint requirements in support of the CCIP, JCMS/JCAT and Theater Command Control System (TCCS).
- (U) ($50) Participate in GCCS prototyping efforts.
- (U) ($1,100) Complete testing of any remaining Increment III functionality required to satisfy outstanding Navy Command and Control Systems Change Requests (NCRs) and emergent user requirements.
- (U) ($300) Continue to address emergent Navy and Joint C^{4}I requirements for Ashore Command Centers.
- (U) ($250) Continue to incorporate state-of-the-art technologies such as distributed databases, virtual reality and interactive video.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

- (U) ($250) Begin interfacing and integration with readiness data from other Navy sources.
- (U) ($350) Implement detailed PC EMPSKD message capability to assist units to create error free CASREP, SORTS and MOVREP messages.
- (U) ($200) Study USN message and data flow. Recommend changes as necessary.
- (U) ($150) Continue efforts to incorporate super computer and/or parallel processor solutions into OSS to improve system performance.
- (U) ($150) Continue systems engineering and prototype development on AI/Expert System driven decision aids to provide real time decision making support to operational commanders.
- (U) ($250) Perform Navy and Joint Interoperability Certification Tests and resolve technical deficiencies.

4. (U) FY 1997 PLAN:

- (U) ($450) Conduct Developmental Testing and Beta Testing on OSS software release.
- (U) ($200) Complete testing and fielding of FHLT, STT and ESS prototype upgrades to reach full functional baseline.
- (U) ($200) Continue to explore requirements for expanding the scope of OSS to include additional Joint, Allied (NATO and other), Foreign (through FMS cases) and Navy users. Continue execution of Cooperative Development with SACLANT.
- (U) ($200) Develop integrated interface using a common architecture for OSS users to existing DOD Databases.
- (U) ($200) Continue implementation of appropriate MLS features.
- (U) ($300) Continue to integrate/analyze OSS sites in conjunction with COTS hardware upgrades, and state-of-the art displays, video distribution systems and briefing aids (including multimedia, 3-D visualization and very high resolution images). Continue security engineering efforts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

- (U) ($950) Continue enhancing UB software to satisfy OSS requirements; integrate successive OSS releases into OSS/JMCIS baseline.
- (U) ($1,614) Maintain OSS architectural compatibility with GCCS, C⁴IFTW and JMCIS.
- (U) ($150) Continue to develop and upgrade joint requirements in support of the CCIP, JCMS/JCAT and TCCS.
- (U) ($50) Participate in GCCS prototyping efforts.
- (U) ($800) Complete testing of any remaining Increment III functionality required to satisfy outstanding NCRs and emergent user requirements.
- (U) ($250) Continue to address emergent Navy and Joint C⁴I requirements for Ashore Command Centers.
- (U) ($250) Continue to incorporate state-of-the-art technologies such as distributed databases, virtual reality and interactive video.
- (U) ($200) Complete system integration and tests of USN message and data flow recovered.
- (U) ($150) Continue interfacing/integrating with readiness data from other Navy Sources.
- (U) ($350) Complete and field PC EMPSKD message capability to assist units to create error free CASREP, SORTS and MOVREP messages.
- (U) ($150) Continue efforts to incorporate super computer and/or parallel processor solutions into OSS to improve system performance.
- (U) ($150) Continue systems engineering and prototype development on AI/Expert System driven decision aids to provide read time decision making support to operational commanders.
- (U) ($250) Perform Navy and Joint Interoperability Certification Tests and resolve technical deficiencies.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	11,219	11,718	9,570	8,220
(U) FY 1995 Appropriated:		11,718		
(U) Adjustments from PRESBUDG:	- 4	-326		
(U) FY 1996/97 OSD/OMB Budget Submit:	11,215	11,392	7,365	6,864

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94 was decreased by $4K due to an end of year execution update. FY 95 was decreased by $326K, $175K to accommodate small business innovative research and $151K to reflect undistributed reductions for travel, consulting services, and university research.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN 2906 (OSS Only)	10,408	7,947	5,747	4,080	6,620	5,686	9,229	9,446	CONT.	CONT.
OMN	12,761	11,652	14,232	12,785	14,248	14,552	14,378	13,885	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE (0604231N) OSIS Baseline Upgrade, Tactical Support Center, NCCS Tactical Flag Command Center.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: OSS

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		NPDM 4Qtr M/S III B		NPDM 4Qtr M/S III C	CONT.
Engineering Milestones	INC II/III 2-3Qtr PDR/CDR	INC III/IV 2-3Qtr PDR/CDR	INC III/IV 2-3Qtr PDR/CDR	INC III/IV 2-3Qtr PDR/CDR	CONT.
T&E Milestones		DT-IIB 3-4Qtr OT-IIB 3-4Qtr		DT-IIB 3-4Qtr OT-IIC 3-4Qtr	CONT.
Contract Milestones	INC II/III Contract awards		INC IV Contract awards		CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System (TCS) PROJECT TITLE: Operations Support System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	488	384	415	380
b. Software Development	7,263	6,752	4,428	4,208
c. Systems Engineering	3,314	4,106	2,372	2,076
d. Test and Evaluation	150	150	150	200
Total	11,215	11,392	7,365	6,864

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
SAIC McLean,VA	RADIUS	12/92 OPTIONS	9,400	9,400	9,400	4,498	4,687	3,028	2,808	Cont.	Cont.
PRC	CPFF	4/94	1,350	1,350		1,350				1,350	1,350
TBD	CPFF	3/95	2,400	2,400			1,000	700	700	Cont.	Cont.
INRI Reston	SS/CPFF	12/93	3,880	3,880		1,415	1,065	700	700	Cont.	Cont.
NRAD	WX	12/92 Options	6,369	6,369	6,369	2,302	2,736	1,236	1,277	Cont.	Cont.
NISE WEST Various	WX	12/93			18,907	75 937	1,370	1,136	799	Cont.	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2041
PROGRAM ELEMENT TITLE: Tactical Command System (TCS) PROJECT TITLE: Operations Support System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management:											
Travel					130	182	164	180	180	Cont.	Cont.
Various					225	306	220	235	200	Cont.	Cont.
Test and Evaluation:											
OPTEVFOR					350	150	150	150	200	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development:	34,676	10,577	10,858	6,800	6,284	Cont.	Cont.
Subtotal Support and Management	355	488	384	415	380	Cont.	Cont.
Subtotal Test and Evaluation:	350	150	150	150	200	Cont.	Cont.
Total Project:	35,381	11,215	11,392	7,365	6,864	Cont.	Cont.

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0521
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: STIP

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0521	4,720	4,812	2,783	4,903	5,329	6,487	6,575	6,687	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Tactical Intelligence Processing System (STIP) is an integrated tactical intelligence shipboard processing system which is the central database for the Tactical Flag Command Center (TFCC), Space and Electronic Warfare Commander (SEWC) and tactical mission planning systems. Development of this integrated database server provides for data distribution (dynamic update of Naval Warfare Tactical Database NWTDB)) and military integration with digital map and imagery systems. STIP began interface development with the Joint Services Imagery Processing - Navy (JSIPS) in FY 1990.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($2,075) Completed development of CDBS/AMH and intelligence applications for NTCS-A 2.1.
- (U) ($481) Commenced development of CDBS/AMH and applications for NTCS-A 3.0.
- (U) ($240) Completed NIPS/DIWS integration and test.
- (U) ($337) Commenced integration and testing of Marine Corps systems.
- (U) ($567) Completed integration and testing of advanced digital imagery processing capabilities into NTCS-A 2.1.
- (U) ($385) Commenced development of real time updates to CDBS/AMH.
- (U) ($150) Commenced integration of CD ROM scanner multimedia devices into NTCS-A.
- (U) ($150) Commenced integration of compartmented mode workstation functionality into NIPS/NTCS-A.
- (U) ($335) Commenced integration and testing of mission planning systems requirements.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0521
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: STIP

2. (U) FY 1995 PLAN:

- (U) ($350) Continue developments and integration of multimedia capabilities into NTCS-A.
- (U) ($828) Continue development of database support for TDAs in the CDBS.
- (U) ($830) Complete integration of mission planning requirements into the CDBS.
- (U) ($586) Complete integration of Marine Corps requirements into NTCS-A.
- (U) ($585) Develop, integrate and test advanced digital image processing capabilities into FY 95 software release.
- (U) ($1,483) Develop, integrate and test CDBS/AMH and intelligence applications into FY 95 software release.
- (U) ($150) Continue integration of compartmented workstation functionality.

3. (U) FY 1996 PLAN:

- (U) ($768) Develop, integrate and test CDBS/AMH and intelligence applications for FY96 software release.
- (U) ($644) Develop, integrate and test advanced digital imagery applications for FY96 software release.
- (U) ($332) Continue to develop and integrate multimedia display technology into Video Display System.
- (U) ($166) Complete integration and test of compartmented mode workstation.
- (U) ($375) Continue development of data base support for TDAs on the CDBS.
- (U) ($332) Commence development of object oriented data base.
- (U) ($166) Commence investigation and development of CIO, USMC, USCG, USAF, USA and other joint intelligence and imagery systems interfaces with NTCS-A to meet DOD standardization requirements.

4. (U) FY 1997 PLAN:

- (U) ($1,433) Develop, integrate and test CDBS/AMH and intelligence applications for FY97 software release.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0521
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: STIP

- (U) ($1,195) Develop, integrate and test advanced digital imagery applications for FY97.
- (U) ($716) Complete development and integration of multi-media display technologies into Video Display System.
- (U) ($694) Continue to develop data base support for TDAs.
- (U) ($575) Continue object oriented data base development.
- (U) ($290) Continue to investigate and develop USMC, USCG, USAF, USA and other joint intelligence and imagery systems interfaces with NTCS-A to meet DOD standardization requirements.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,720	4,999		
(U) FY 1995 Appropriated:		4,999		
(U) Adjustments from appropriated FY 1995 PRESBUDG:		-187		
(U) FY 1996/97 PRESBUDG Submit:	4,720	4,812	2,783	4,903

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The 1995 reduction ($-187K) to accommodate SBIR ($-86K), Travel ($-7K), CSS reduction ($-86K), and a University Research reduction of ($-8K).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0604231N (Tactical Command Systems) Navy Tactical Command System - Afloat (NTCS-A)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: ' Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0521
PROJECT TITLE: STIP

D. (U) SCHEDULE PROFILE:

	FY 1994				FY 1995				FY 1996				FY 1997				TO COMPLETE
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Program Milestones				MSIIIC				MSIIID				MSIIIE				MSIIIF	CONT.
Engineering Milestones				S/W UPDATE				S/W UPDATE				S/W UPDATE				S/W UPDATE	CONT.
T&E Milestones				DT-IIC1 D OT-IIC1 D				DT-IIE OT-IIE				DT-IIF OT-IIF					CONT.
Contract Milestones				EXCSE OPTN				EXCSE OPTN				EXCSE OPTN				AWARD NEW CONTRACT	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0521
PROJECT TITLE: STIP

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
Project Management	275	285	295	332
Systems Engineering	1,236	704	700	1,327
Software Development	2,864	3,453	1,406	2,670
Hardware Development	150	175	166	358
System Test & Evaluation	195	195	216	216
Total	4,720	4,812	2,783	4,903

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0521
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: STIP

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NRAD	WX	VAR					2,680	1,461	2,558	CONT.	CONT.
INRI, Reston,VA	SS-CPFF	12/93				1,236	704				1,940
TBD	SS-CPFF							700	1,327	CONT.	CONT.
All Other	WX	VAR			2,262	3,014	948	111	470	CONT.	CONT.
Support and Management		VAR			19	275	285	295	332	CONT.	CONT.
Test and Evaluation		VAR			86	195	195	216	216	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0521
PROJECT TITLE: STIP

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	2,262	4,250	4,332	2,272	4,355	CONT.	CONT.
Subtotal Support and Management	19	275	285	295	332	CONT.	CONT.
Subtotal Test and Evaluation	86	195	195	216	216	CONT.	CONT.
Total Project	2,367	4,720	4,812	2,783	4,903	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604261N
PROGRAM ELEMENT TITLE: Acoustic Search Sensors

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0480 ASW Sensors & Processing	14,940	4,520	1,203	3,899	13,471	30,673	42,547	35,256	CONT.	CONT.
H2000 Air Deployed Active Receiver (ADAR)	13,975	13,896	8,477	6,387	452	10	0	0	0	79,522
TOTAL	28,915	18,416	9,680	10,286	13,923	30,683	42,547	35,256	0	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) (H0480) - This project provides improved air Anti-Submarine Warfare (ASW) mission effectiveness through engineering development of hardware and software associated with acoustic systems, sensors, processing, post-processing, data recording and displays for air ASW platforms. Key objectives: improved detection, classification, localization and tracking; and increased capacity and flexibility to handle multi-sensor data. Programs being funded during the period identified are the Acoustic Intercept System (AIS) which is a full spectrum acoustic processor and the Generic Acoustic Stimulator System (GASS) which is an ocean, sensor and target-modeling combination that will couple with all ASW trainers. Future programs planned for this project include the Shallow Water ASW Localization and Attack System (SWALAS) to provide improved localization and attack in regional conflict environments and the Advanced Extended Echo Ranging (AEER) system to provide an improved bistatic acoustic source for harsh water environments. Acoustic Intercept System (AIS) terminated in FY94.

(U) (H2000) - The Air Deployed Active Receiver (ADAR) sonobuoy is an expendable air-launched acoustic receiver utilized by ASW aircraft. The ADAR sonobuoy functions as the acoustic receiver for the Improved Extended Echo Ranging (IEER) system. IEER is a mono/multistatic acoustic sensor system that utilizes an ASW aircraft, supporting acoustic source, and acoustic receiver in a coordinated ASW search and surveillance mission against conventionally powered submarines operating in shallow water environments as well as all submarines capable of operating in deep water. The ADAR Sonobuoy will also be capable of functioning in a passive mode to track high speed targets.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604261N
PROGRAM ELEMENT TITLE: Acoustic Search Sensors

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0480 ASW Sensors & Processing	14,940	4,520	1,203	3,899	13,471	30,673	42,547	35,256	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides improved air Anti-Submarine Warfare (ASW) mission effectiveness through engineering development of hardware and software associated with acoustic systems, sensors, processing, post-processing, data recording and displays for air ASW platforms. Key objectives: improved detection, classification, localization and tracking; and increased capacity and flexibility to handle multi-sensor data. Programs being funded during the period identified are the Acoustic Intercept System (AIS) which is a full spectrum acoustic processor and the Generic Acoustic Stimulator System (GASS) which is an ocean, sensor and target-modeling combination that will couple with all ASW trainers. Future programs planned for this project include the Shallow Water ASW Localization and Attack System (SWALAS) to provide improved localization and attack in regional conflict environments and the Advanced Extended Echo Ranging (AEER) system to provide an improved bistatic acoustic source for harsh water environments. The Acoustic Intercept System (AIS) was terminated in FY94 because of affordability.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

(U) AIS

- (U) ($2,091) Cost incurred at termination.
- (U) ($1,100) Fully fund the ongoing Environmental Models (GFE/GFI) development for GASS.
- (U) ($1,900) Transfer to the Air Deployed Active Receiver (ADAR), Project H2000, to fully fund software integration contracts to complete the detail design and coding of the S-3B/ADAR system.
- (U) ($2,099) Reprogrammed internally within program element.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Februaery 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H0480
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: ASW Sensors & Processing

1. (U) FY 1994 ACCOMPLISHMENTS: (continued)

(U) GASS

- (U) ($3,015) Initiated prototype lab demonstration.
- (U) ($956) Commence development of Government Furnished Equipment (GFE) environmental software modifications.
- (U) ($2,148) Prepared Engineering & Manufacturing Development (EMD) solicitation for pre-production units.
- (U) ($1,631) Other engineering and contract support services.

2. (U) FY 1995 PLAN:

(U) GASS

- (U) ($1,285) Complete prototype lab demonstration and analysis.
- (U) ($667) Prototype transition to support government labs.
- (U) ($1,078) Continue development of GFE environmental software.
- (U) ($1,490) Other engineering support and contract support services.

3. (U) FY 1996 PLAN:

(U) GASS

- (U) ($379) Continue development of GFE environmental software.
- (U) ($400) Complete EMD contract source selection.
- (U) ($100) Complete prototype transition.

- (U) ($324) Provide other engineering support and contractor support services.

4. (U) FY 1997 PLAN:

(U) GASS

- (U) ($2,349) Complete Milestone II and award EMD contract.
- (U) ($551) Provide engineering support and contractor support services.
- (U) ($100) Continue GFE environmental software support.

(U) AEER

- (U) ($700) Prepare EMD solicitation and system specification.
- (U) ($199) Provide other engineering support and contractor support services.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	16,864	4,799	XXX	XXX
(U) FY 1995 Appropriated:	XXX	4,799	XXX	XXX
(U) Adjustments Approp/FY 1995 PRESBUDG	-1,924	-279	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	14,940	4,520	1,203	3,899

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H0480
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: ASW Sensors & Processing

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1994 budget was decreased $1,924K for end-of-year execution update. The FY 1995 decrease of $8K reflects the allocation of undistributed adjustments.

(U) Schedule: GASS Prototype demonstration has been extended to complete in 3Q/95 vice 4Q/94. MS II slipped from 2Q/95 to 1Q/97 and EMD contract award from 3Q/95 to 1Q/97. Program has been restructured due to funding reductions and technical problems, i.e., design changes, integration of the ADAR, and testing of the GASS prototype.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) - Not applicable.

(U) RELATED RDT&E:

(U) PE 0603254N (ASW Systems Development)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H0480
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: ASW Sensors & Processing

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones				1Q GASS Milestone II	1Q/98 AEER MS-II 3Q/02 GASS MS-III
Engineering Milestones		3Q GASS Proto Demo			1Q/99 GASS PDR 1Q/00 GASS CDR 4Q/99 AEER PDR 2Q/00 AEER CDR
T&E Milestones					2Q/02 GASS TTPRR 2Q/03 AEER TECHEVAL 4Q/03 AEER OPEVAL
Contract Milestones				1Q GASS EMD Contract Award	2Q FY 98 AEER EMD Contract Award

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H0480
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: ASW Sensors & Processing

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Software Development	5,144	2,363	379	1,323
b. System Engineering	850	350	100	300
c. Government Engineering Support	1,646	957	306	1,539
d. Program Management Support	578	280	198	517
e. Contractor Engineering Support	1,623	570	220	220
f. AIS funding currently on deferral	3,000	0	0	0
g. AIS reprogramming to ADAR	2,099	0	0	0
Total	14,940	4,520	1,203	3,899

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H0480
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: ASW Sensors & Processing

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
APLABS San Diego, CA	C/CPFF	7/93	5,020	5,020	800	2,935	1,285	0	0	0	5,020
SAIC McLean, VA	C/CPFF	6/91	4,462	4,462	1,855	1,050	1,078	379	100	0	4,462
EMD Contractor	TBD	2/97	TBD	39,938	0	0	0	0	1,323	38,615	39,938
Misc/In House	WX	10/95	TBD	TBD	8,697	3,655	1,307	406	1,739	CONT	CONT
Support and Management											
Misc/In House	WX	10/95	TBD	TBD	364	5,677	280	198	517	CONT	CONT
Misc/Contracts	C/CPFF	10/95	TBD	TBD	1,182	1,623	570	220	220	CONT	CONT
Test and Evaluation											
Not Applicable											

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Not Applicable										
Support and Management										
Not Applicable										
Test and Evaluation										
Not Applicable										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05
PROGRAM ELEMENT: 0604261N
PROGRAM ELEMENT TITLE: Acoustic Search Sensors
PROJECT NUMBER: H0480
PROJECT TITLE: ASW Sensors & Processing

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	11,352	7,640	3,670	785	3,162	CONT	CONT
Subtotal Support and Management	1,546	7,300	850	418	737	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	0	CONT	CONT
Total Project	12,898	14,940	4,520	1,203	3,899	CONT	CONT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H2000 Air Deployed Active Receiver (ADAR)	13,975	13,896	8,477	6,387	452	10	0	0	0	79,522

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Air Deployed Active Receiver (ADAR) sonobuoy is an expendable air-launched acoustic receiver utilized by ASW aircraft. The ADAR sonobuoy functions as the acoustic receiver for the Improved Extended Echo Ranging (IEER) system. IEER is a mono/multistatic acoustic sensor system that utilizes an ASW aircraft, supporting acoustic source, and acoustic receiver in a coordinated ASW search and surveillance mission against conventionally powered submarines operating in shallow water environments as well as all submarines capable of operating in deep water. The ADAR Sonobuoy will also be capable of functioning in a passive mode to track high speed targets.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($6,025) Completed EMD contractor subassembly design and 90% of subassembly Contractor Engineering Tests (CETs).
- (U) ($1,884) Completed ADAR/ACAP Critical Design Review (CDR). Completed performance enhancement redesign for detection algorithms and classifier. Initiated code and test.
- (U) ($2,256) Completed S-3B/ADAR System Design Review (SDR). Completed requirements for display man-machine-interface improvements. Updated requirements documentation.
- (U) ($3,810) Continued other engineering support and contractor support services.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: PROGRAM ELEMENT: 06040261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

2. (U) FY 1995 PLAN:

- (U) ($6,537) Complete EMD contractor subassembly and full-up airdrop CETs and PDR. Initiate airdrop Contractor Development Tests (CDTs).
- (U) ($1,432) Complete ADAR/ACAP code, unit and module test. Initiate Independent Verification and Validation (IV&V) test.
- (U) ($2,669) Complete S-3B/ADAR high level and detail design. Initiate code and unit test.
- (U) ($3,258) Continue other engineering support and contractor support services.

3. (U) FY 1996 PLAN:

- (U) ($4,380) Complete airdrop CDTs. Complete EMD Contractor CDR and initiate build and delivery of TECHEVAL/OPEVAL test units.
- (U) ($2,769) Complete ACAP and S-3B subsystems and integrate ADAR/ACAP into the S-3B/ADAR system. Initiate S-3B/ADAR system test and flight test.
- (U) ($1,328) Provide other engineering support and contract support services.

4. (U) FY 1997 PLAN:

- (U) ($900) Complete build and delivery of TECHEVAL and OPEVAL test units.
- (U) ($1,115) Complete S-3B/ADAR integration test and flight test.
- (U) ($1,965) Conduct TECHEVAL.
- (U) ($2,407) Provide other engineering support and contract support services.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	13,975	14,217	XXX	XXX
(U) FY 1995 Appropriated:	XXX	13,896	XXX	XXX
(U) Adjustments from Approp/PRESBUDG:	0	-321	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	13,975	13,896	8,477	6,387

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1995 decrease of $321K reflects the allocation of undistributed adjustments.

(U) Schedule: EMD PDR slipped from 3Q/95 to 4Q/95 due to delays in testing at sea.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN (SSQ-101) (403600)	0	0	0	0	17,006	37,540	39,486	37,147	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

(U) RELATED RDT&E:

(U) PE 0603254N (ASW Systems Development)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					2Q FY 98 MS-III
Engineering Milestones	2Q ADAR/ACAP CDR1 2Q S-3B/ADAR SDR1	1Q ADAR/ACAP CDR2 4Q EMD PDR 1Q S-3B/ADAR SDR2	3Q EMD CDR		
T&E Milestones				4Q TECHEVAL	1Q OPEVAL
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT NUMBER: H2000 PROJECT TITLE: Air Deployed Active Receiver

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Hardware Development	5,682	4,584	2,904	2,112
b. Software Development	4,140	4,101	2,475	1,115
c. Systems Engineering	1,147	563	416	346
d. Development Test and Evaluation	386	2,180	661	1,965
e. Integrated Logistics Support	115	110	111	96
f. Government Engineering Support	1,692	1,246	1,055	90
g. Program Management Support	359	563	297	553
h. Contractor Engineering Support	454	549	558	110
Total	13,975	13,896	8,477	6,387

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
ERAPSCO Fort Wayne, IN	C/CPIF	7/92	22,736	22,736	7,454	5,682	4,584	2,904	2,112	0	22,736
NAWC/AD WAR	WX	10/95	35,920	35,920	20,700	5,734	4,729	3,265	1,492	0	35,920
MISC/In House	WX	10/95	9,868	9,868	6,168	1,360	1,291	832	155	62	9,868
Support and Management											
MISC/In House	WX	10/95	2,587	2,587	815	359	563	297	553	0	2,587
MISC/Contracts	C/CPFF	10/95	2,560	2,560	889	454	549	558	110	0	2,560
Test and Evaluation											
NAWC/AD PAX RV	WX	10/95	2,632	2,632	0	43	227	397	1,965	0	2,632
MISC	WX	10/95	699	699	299	0	0	0	0	400	699

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										
NAWC/AD WAR	WX	10/95	1/96	0	343	1,953	264	0	0	2,560

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N PROJECT NUMBER: H2000
PROGRAM ELEMENT TITLE: Acoustic Search Sensors PROJECT TITLE: Air Deployed Active Receiver

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	34,322	12,776	10,604	6,961	3,759	62	68,484
Subtotal Support and Management	1,704	813	1,112	855	663	0	5,147
Subtotal Test and Evaluation	299	386	2,180	661	1,965	400	5,891
Total Project	36,325	13,975	13,896	8,477	6,387	462	79,522

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604262N
PROGRAM ELEMENT TITLE: V-22

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1425 V-22	9,164	452,721	762,548	580,929	482,561	254,636	109,529	76,220	198,000	6,880,164
W2088 MEDIUM LIFT REPLACEMENT	629	0	0	0	0	0	0	0	0	22,629
TOTAL	9,793	452,721	762,548	580,929	482,561	254,636	109,529	76,220	198,000	6,902,793

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element funds the development of a replacement aircraft to meet the medium lift needs of the United States Marine Corps (USMC) and the special operations needs of the United States Special Operations Command (USSOCOM). Project W2088, the Medium Lift Replacement (MLR) program funded (FY94 and prior) trade studies to define alternate designs to meet the MLR operational requirement.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT (EMD) because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604262N
PROGRAM ELEMENT TITLE: V-22

DATE: February 1995

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1425 V-22	9,164	452,721	762,548	580,929	482,561	254,636	109,529	76,220	198,000	6,880,164

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The V-22 program is designed to provide an aircraft to meet the medium lift amphibious/vertical assault needs of the USMC and the special operations needs of the USSOCOM. The aircraft will be capable of operations from aviation and air capable ships, as well as from unimproved landing sites throughout the world. The tiltrotor aircraft combines the speed, range and fuel efficiency normally associated with turboprop aircraft with the vertical take-off/landing and hover capabilities of helicopters. The special operations aircraft (CV-22) will consist of the baseline V-22 aircraft (MV-22) configuration plus a terrain following radar, additional fuel tanks, radios and flare/chaff dispensers, radar jammer and warning receiver, and infrared counter measures. The CV-22 will be approximately 90% common with the MV-22. Beginning in FY 1996, Project H1425 funds both the MV-22 and CV-22 research, development, test and evaluation efforts.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) Predominance of FY 1994 efforts were financed with FY 1993 funds.
- (U) ($650,437 of FY 1993 funds) The basic MV-22 EMD contract was definitized on 3 May 1994 at a total price of $2,650 million.
- (U) ($64,119 of FY 1993 funds & $5,473 of FY 1994 funds) Funds used to support in-house planning, management, engineering, test and evaluation efforts, and contracted engineering technical services and logistics support services. Developed an integrated Navy/USSOCOM program plan and cost estimate. Conducted a Cost and Operational

Effectiveness Analysis (COEA), a cost reduction study, and an independent technical and schedule risk assessment. Completed preliminary design review (PDR) in April 1994. FY 1994 testing included OTIIA, flight envelope expansion tests and artificial icing trials utilizing two modified FSD aircraft. Completed inlet and rotor anti-icing testing at -5 and -10 degrees centigrade.

- (U) ($4,990 of FY 1994 USSOCOM funding) Issued a study contract to begin CV-22 configuration development and design risk assessment.
- (U) ($0) MS II+ Defense Acquisition Board (DAB) review held on 13 September 1994.

2. (U) FY 1995 PLAN:

- (U) ($407,854) Continue contract efforts related to the EMD program, including the fabrication/assembly of E&MD aircraft. Begin Fatigue Test Article (FTA) effort. MV-22 Critical Design Review (CDR) successfully completed on 14 December 1994.
- (U) ($44,867) Support in-house/Navy flight test activities, integrated test teams (ITTs), integrated product teams (IPTs), support equipment development, logistics and training activities, the manned flight simulator and numerous other development and test efforts at the government's in-house activities.
- (U) ($3,691 of FY 1994 funding) Fund engine testing and development of support material list. Fund procurement of Government Furnished Equipment (GFE).
- (U) ($9,310 of FY 1994 USSOCOM funding) Modify EMD contract to include CV-22 requirements related to preliminary design and fund in-house planning efforts.

3. (U) FY 1996 PLAN:

- (U) ($709,845) Continue contract efforts related to the EMD program, including the fabrication/assembly and ground testing of EMD aircraft and GFE integration. Begin Navy funding of CV-22 efforts, including the ordering of a fifth EMD aircraft.

- (U) ($52,703) Continue in-house/Navy flight test activities, ITTs, IPTs, support equipment development, logistics and training activities, the manned flight simulator and numerous other development and test efforts at the government's in-house activities.

4. (U) FY 1997 PLAN:

- (U) ($512,475) Continue MV-22 and CV-22 contract efforts related to the EMD program, including delivery and flight testing of EMD aircraft and GFE integration.

- (U) ($68,454) Continue in-house/Navy flight test activities, ITTs, IPTs, support equipment development, logistics and training activities, the manned flight simulator and numerous other development and test efforts at the government's in-house activities. Conduct CV-22 PDR.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,165	496,930	XXX	XXX
(U) FY 1995 Appropriated:	XXX	466,930	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	+3,999	-14,209	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	9,164	452,721	762,548	580,929

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1994 increase of $3,999K was primarily used to conduct a COEA, cost reduction study, and an independent program assessment. The FY 1995 decrease of $14,209K reflects Congressional undistributed reductions (University Research, Consulting Services, travel, and Small Business Innovation Research).

(U) Schedule: Schedule changed to include CV-22 milestones.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604262N
PROGRAM ELEMENT TITLE: V-22

PROJECT NUMBER: H1425
PROJECT TITLE: V-22

C. (U) OTHER PROGRAM FUNDING SUMMARY:

LI/APN	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
8 V-22	0	0	0	580,848	552,287	677,026	669,043	757,457	30,727,149	34,195,210
9 V-22 Adv Proc	0	0	48,022	60,000	75,000	80,000	81,000	113,000	3,254,591	3,711,613
45 Spares	0	0	0	52,000	61,000	63,000	113,000	10,000	3,134,426	3,433,426
Total APN	0	0	48,022	692,848	688,287	820,026	863,043	880,457	37,116,166	41,340,249

(U) RELATED RDT&E: PE 116404BB CV-22

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q94 MSII+				
Engineering Milestones	3Q94 MV PDR	1Q95 MV CDR		1Q97 CV PDR	1Q98 CV CDR
T&E Milestones	3Q94 OT Assess	3Q95 OT Assess	3Q96 OT Assess	2Q97 OT Assess	1Q99 TECHEVAL 2Q-4Q99 OPEVAL
Contract Milestones	3Q94 EMD Def 4Q94 CV Study Efforts	3Q95 CV turn on for Preliminary Design	2Q96 CV Def		1Q99 MS III

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604262N PROGRAM ELEMENT TITLE: V-22 PROJECT NUMBER: H1425 PROJECT TITLE: V-22

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Prime Contractor Development	3,346	388,644	690,343	493,895
b. Contractor Engineering Support	1,456	19,210	19,502	18,580
c. Government Engineering Support	1,269	42,427	50,170	65,870
d. Studies	3,093	0	0	0
e. Other	0	2,440	2,533	2,584
Total	9,164	452,721	762,548	580,929

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604262N PROJECT NUMBER: H1425
PROGRAM ELEMENT TITLE: V-22 PROJECT TITLE: V-22

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
Bell-Boeing Arlington, VA	CPAF	10/92	TBD	TBD	1,210,172	0	386,644	685,343	488,995	CONT.	CONT.
Allison Indianapolis, IN	CPIF	12/92	TBD	TBD	142,535	3,346	2,000	5,000	4,900	CONT.	CONT.
STI Rockville, MD	T&M	04/90	10,380	10,380	7,025	1,456	1,899	0	0	0	10,380
TBD	T&M	05/95	TBD	TBD	0	0	6,030	6,502	6,100	CONT.	CONT.
NAWCADPAX	WR	10/94	TBD	TBD	*	0	19,625	25,818	35,344	CONT.	CONT.
NAWCADWAR	WR	07/94	TBD	TBD	*	0	7,593	8,353	10,146	CONT.	CONT.
NAWCADIND	WR	10/94	TBD	TBD	*	0	9,267	10,193	10,591	CONT.	CONT.
NAD Cherry Point	WR	10/94	TBD	TBD	*	0	7,435	8,257	10,112	CONT.	CONT.
NAWCADLKE	WR	10/94	TBD	TBD	*	0	6,952	6,850	5,966	CONT.	CONT.
NAWCWDCHL	WR	10/94	TBD	TBD	*	0	1,876	1,292	924	CONT.	CONT.
MISC In-House	various	various	TBD	TBD	*	1,269	3,400	4,940	7,851	CONT.	CONT.
Support and Management:											
MISC Contracts	various	various	3,093	3,093	0	3,093	0	0	0	0	3,093

* Total FY93 & Prior amounts are not available.

Test and Evaluation: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604262N
PROGRAM ELEMENT TITLE: V-22
PROJECT NUMBER: H1425
PROJECT TITLE: V-22

GOVERNMENT FURNISHED PROPERTY:

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development:				1,359,732	6,071	452,721	762,548	580,929	1,120,946	6,880,164
Subtotal Support and Management:					3,093	0	0	0	0	3,093
Subtotal Test and Evaluation:										
Other FY-93 and Prior Costs				2,594,124 \1						
Total Project				3,953,856	9,164	452,721	762,548	580,929	1,120,946	6,883,254

\1 Reflects previous V-22 funding in the following P.E.'s: 0603203N, 0603256N, 0604222A, & 0604262N.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604264N
PROGRAM ELEMENT TITLE: Aircrew Systems Development

PROJECT NUMBER: W0606
PROJECT TITLE: Aircrew Systems Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0606 Aircrew Systems Development	14,512	13,994	9,788	14,915	15,344	18,771	14,729	14,289	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Aircrew Systems Development program provides engineering and manufacturing development (EMD) of Aviation Life Support Systems to protect aircrews from current known and future threats including: directed energy weapons, chemical/biological/radiological agents/fallout, ballistic projectiles, temperature extremes, heat/fire, low concentration oxygen environments, high dynamic forces during emergency egress, and high "G" forces. The program also provides development for the following capabilities: head protection, inflight restraint, emergency egress and descent, escape and evasion, survival and rescue, and anthropometric sizing for female aircrew. Acquisition initiatives include competition, the application of streamlining, use of nondevelopment items (NDI), joint and tri-service developments, and the pursuit of NATO/allied cooperative ventures to expedite introduction into Navy and Marine Corp fixed and rotary wing aircraft, reduce costs, and promote commonality.

(U) SUBPROJECTS:

- (U) ESCAPE AND CRASH SAFETY: Naval Aircrew Common Ejection Seat Pre-Planned Product Improvement (NACES P^3I), Advanced Crashworthy Aircrew Seat System (ACASS), Joint Inflatable Body and Head Restraint System (IBAHRS), and AIR BAGS NDI.
- (U) LIFE SUPPORT: Passenger Anti-Exposure Survival Systems (PAESS), Extreme Cold Weather Improvement Program (ECWIP), and Aircrew Modified Equipment Leading to Increased Accommodation (AMELIA).
- (U) THREAT PROTECTION: Joint Laser Eye Protection (LEP), Chemical Biological (CB), On Board Oxygen Generating System (OBOGS), Navy Combat Edge (NCE), Advanced Technology Crew Station (ATCS), Advanced Integrated Life Support Systems (AILSS), Advanced Oxygen Delivery System (AODS), and Advanced Oxygen Mask (AOM).
- (U) HELMET VISION AND DISPLAYS: Aircrew Integrated Survival Armor Protection (AISAP), Cats-Eyes Emergency Detachment System (CEEDS), Joint Night Vision System (NVS), Night Vision NDI, and Helmet Mounted Cueing System (HMCS).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604264N PROJECT NUMBER: W0606
PROGRAM ELEMENT TITLE: Aircrew Systems Development PROJECT TITLE: Aircrew Systems Development

- (U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($4,527) OBOGS: Completed Development Testing (DT) and approved Engineering Change Proposal (ECP). NCE: Continued DT and commenced Technical Assessment. ATCS: Completed joint efforts. AISAP: Completed DT.

- (U) ($3,491) NACES P^{3}I: Continued accomodation of a wider range of aircrew anthropometry. ACASS: Completed detailed and assessment of rotary wing crashworthy improvements and continued developing improved emergency egress. IBAHRS: Completed joint DT and ECP's.

- (U) ($2,260) PAESS: Revised design and initiated ECP revision. ECWIP: Continued DT and initiated/completed initial operational assessment for cold weather gloves. HEEDS P^{3}I: Evaluated NDI candidates. AMELIA: Continued DT for female aviator equipment problems and completed equipment survey of female aircrew.

- (U) ($1,583) Navy CB: Completed draft Request for Proposal (RFP) and initiated evaluation of NDI proposals. LEP: Updated Operational Requirement and issued Request for Information.

- (U) ($2,651) Joint NVS: Monitored Preliminary Design Review/Critical Design Review and USAF down selection. Night Vision NDI: Commenced test/evaluation. CEEDS: Approved helmet/airframe ECP's and completed flight testing HMCS: Began hardware/software (HW/SW) development, test/evaluation planning.

2. (U) FY 1995 PLAN:

- (U) ($1,300) NCE: Start and complete Technical Evaluation (TECHEVAL) and commence Operational Evaluation (OPEVAL).

- (U) ($3,324) NACES P^{3}I: Complete final assessment for wider range of aircrew accomodation and initiate modification of ECPs to the ejection seat. ACASS: Conduct DT on crashworthy improvements. IBAHRS: Obtain Milestone (MS) III and approve ECP's.

- (U) ($2,427) ECWIP: Submit ECP for cold weather gloves and continue DT for cold weather clothing survival items. HEEDS P^{3}I: Complete fleet assessment of NDI candidates. AMELIA: Continue DT and complete anthropometric database.

- (U) ($3,424) Navy CB: Complete RFP rewrite and release to industry. Initiate fleet-wide survey. LEP: Initiate source selection and initiate DT.

- (U) ($3,519) Night Vision NDI: Continue DT. HMCS: Continue HW/SW development; Test and Evaluation planning.

3. (U) FY 1996 PLAN:

- (U) ($800) NCE: Complete OPEVAL and obtain combined MS II and III.

- (U) ($2,792) NACES P^{3}I: Continue modification verification and initiate ECP's for ejection seat. ACASS: Continue DT.

- (U) ($1,100) ECWIP: Continue DT for cold weather clothing survival items. HEEDS P^{3}I: Prepare ECP. AMELIA: Continue DT for identified accommodation problems for female and small aviators. Continue fleet-wide Aviation Life Support Systems (ALSS) survey.

- (U) ($300) LEP: Continue DT.

- (U) ($4,796) Night Vision NDI: Continue DT. HMCS: Award platform integration contract, begin Operational Flight Program (OFP) S/W development. Obtain MS II.

4. (U) FY 1997 PLAN:

- (U) ($3,825) AILSS: Initiate EMD for rotary wing. AOM: Initiate EMD DT. AODS: Initiate EMD DT.

- (U) ($2,320) ACASS: Continue DT. AIR BAGS NDI: Initiate RDT&E effort for rotary wing air bag system. Evaluate current technology and begin DT.

- (U) ($515) ECWIP: Continue DT for cold weather clothing and survival items and prepare ECP's. HEEDS P^{3}I: Approve ECP. AMELIA: Continue DT and OT.

- (U) ($3,170) LEP: Continue DT.
- (U) ($5,085) NV NDI: Continue DT. HMCS: Award joint USN/USAF helmet/tracker contract. Continue platform integration, and OFP S/W development. Conduct HMCS Preliminary Design Review (PDR).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604264N PROJECT NUMBER: W0606
PROGRAM ELEMENT TITLE: Aircrew Systems Development PROJECT TITLE: Aircrew Systems Development

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	14,512	12,157	XXX	XXX
(U) FY 1995 Appropriated	XXX	15,157	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	XXX	-1,163	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	14,512	13,994	9,788	14,915

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95 decrease reflects Congressionally directed undistributed reductions in the amount of (-1,163).

(U) Schedule:
1. Schedule changes, cancellations, and delays have been impacted by funding reductions in FY 95-96.
2. Undistributed reductions in FY 96 will cancel joint Night Vision and several sub-projects.
3. Chemical Biological (CB) program transferred to OSD in FY 96.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604264N PROJECT NUMBER: W0606
PROGRAM ELEMENT TITLE: Aircrew Systems Development PROJECT TITLE: Aircrew Systems Development

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) Not Applicable.

(U) RELATED RDT&E:

(U) PE 0603216N (Aviation Survivability)
(U) PE 0604706F (Life Support Equipment, related Air Force efforts)
(U) PE 0604713A (Combat Feeding, Clothing and Equipment, related Army efforts. Coordinated through the OSD sponsored Tri-Service Life Support RDT&E Steering Committee

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		4Q IBAHRS MS III	3Q NCE MS II & III 4Q HMCS OFP MS II		AILSS III HMCS MS III LEP MS III AIR BAGS NDI MS III
Engineering Milestones				3Q HMCS PDR	
T&E Milestones	2Q AISAP DT 3Q OBOGS DT 3Q IBAHRS DT 4Q NCE DT	4Q NT. VIS NDI TEMP 2Q NCE TEMP 3Q HMCS TEMP 3Q NACES P³I DT 3Q NCE DT/OT 3Q LEP DT	NCE OT COMP.	3Q ECWIP DT	NACES P³I TEMP HMCS DT/OT
Contract Milestones	2Q Navy CB NDI Dr.RFP 1Q LEP RFI	4Q NAVY CB NDI RFP	HMCS KT		

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604264N PROJECT NUMBER: W0606
PROGRAM ELEMENT TITLE: Aircrew Systems Development PROJECT TITLE: Aircrew Systems Development

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	4,336	4,058	2,447	4,325
b. Developmental T&E	5,805	5,597	3,915	5,816
c. Operational T&E	18	139	195	149
d. ILS	4,353	4,200	3,231	4,625
Total	14,512	13,994	9,788	14,915

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604264N
PROGRAM ELEMENT TITLE: Aircrew Systems Development

PROJECT NUMBER: W0606
PROJECT TITLE: Aircrew Systems Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAWC/AD WARM	WX/RX	10/95	NA	NA		4,999	3,101	1,900	1,769	Con't	Con't
NAWC/AD PAX	WX/RX	10/95	NA	NA		2,000	360	300	1,446	Con't	Con't
Support and Management											
MISC (less than $1M)	WX/RX	10/95	NA	NA		1,690	4,797	3,478	5,735	Con't	Con't
Test and Evaluation											
MISC (less than $1M)	WX/RX	10/95	NA	NA		5,823	5,736	4,110	5,965	Con't	Con't

GOVERNMENT FURNISHED PROPERTY: NOT APPLICABLE

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604264N
PROGRAM ELEMENT TITLE: Aircrew Systems Development
PROJECT NUMBER: W0606
PROJECT TITLE: Aircrew Systems Development

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development		6,999	3,461	2,200	3,215	CONT.	CONT.
Subtotal Support and Management		1,690	4,797	3,478	5,735	CONT.	CONT.
Subtotal Test and Evaluation		5,823	5,736	4,110	5,965	CONT.	CONT.
Total Project		14,512	13,994	9,788	14,915	CONT.	CONT.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1961 Mobile Electronic Warfare Support System	0	2,506	2,727	190	0	0	0	0	0	13,175
E0556 EW Counter Response	31,728	24,485	3,314	2,693	2,624	3,173	3,198	3,278	CONT.	CONT.
E0619 ASPJ Common Development	3,375	0	0	0	0	0	0	0	CONT.	CONT.
E2175* Tactical Air Electronic Warfare	76,186	73,074	78,310	106,755	98,275	85,862	36,587	33,641	CONT.	CONT.
R1742 EW Technical Development and Testing	832	844	755	736	742	909	914	940	3,400	14,819
R1882 Data Link Vulnerability Analysis	1,165	1,018	1,040	1,043	1,002	1,013	1,016	1,046	26,000	35,000
R2260 Specific Emmitter ID	0	0	1,294	1,095	1,592	1,890	2,089	2,089	CONT.	CONT.
TOTAL	113,286	101,927	87,440	112,512	104,235	92,847	43,804	40,994	CONT.	CONT.

* Project E2175 includes Project E0638.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This element includes development of electronic warfare systems for the United States Navy (USN), United States Marine Corps (USMC), and United States Army (USA) tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, USMC communications and non-communications jammers, and development and testing of electronic warfare devices for emergency contingencies.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1961 Mobile Electronic Warfare Support System (MEWSS)	0	2,506	2,727	190	0	0	0	0	0	13,175

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: MEWSS is an electronic warfare suite of equipment configured in the highly mobile, survivable Light Armored Vehicle. This program develops a material change for the current, outdated Electronic Warfare (EW) suite. Threat tactical communications are rapidly advancing to complex, advanced modulations requiring computer-intensive, open architecture solutions. MEWSS fulfills the requirement to provide responsive EW support to maneuver commanders, which enhance the ability to defeat the enemy by isolating and suppressing the opposing fire control and command and control nets at a critical point of time in the battle. MEWSS will provide electronic over-watch of the entire electronic spectrum, freeze the enemy in place and help eliminate enemy counter-fire. MEWSS accomplishes this by detecting and locating threat sensors and advanced communications and also jamming advanced threat tactical communications. MEWSS incorporates Army Intelligence and Electronic Warfare Common Sensor (IEWCS) electronics including Tactical Jammer-Army (TACJAM-A) EW/Communications Intelligence subsystem, Communications High Accuracy Location System-Exploitable, and the Common Module Electronic Intelligence (ELINT) system.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Accomplishments are funded under Program Element (PE) 0305885G, National Security Agency Tactical Cryptologic Program.

- (U) Conducted Milestone II on restructured program.
- (U) Completed integration of IEWCS Engineering Development Model (EDM). MEWSS Developmental Test (DT) will emphasize only MEWSS unique-items; whereas, Army IEWCS DT results will be used to the maximum extent possible.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT NUMBER: C1961 PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

2. (U) FY 1995 PLAN:

- (U) ($527) Integrate the objective Communications High Accuracy Locations System - Exploitable (CHALS-X) subsystem into the MEWSS EDM.
- (U) ($229) Design and install the MEWSS Product Improvement Program (PIP) reporting data link hardware.
- (U) ($100) Initiate Integrated Logistics Support (ILS) documentation.
- (U) ($700) Design and install the MEWSS PIP power unit and power distribution system.
- (U) ($750) Complete IEWCS equipment integration and factory testing.
- (U) ($200) Participate in Army Limited User Testing of IEWCS systems.
- (U) The following accomplishments ($110) are funded in PE 0605873M, Marine Corps Program Wide Support, Project C0033, Marine Corps Operational Test and Evaluation Activity.
- (U) ($110) Conduct Initial Operational Test and Evaluation (IOT&E) and publish Independent Evaluation Report (IER) for MEWSS PIP.

3. (U) FY 1996 PLAN:

- (U) ($250) Conduct multi-service DT and Operational Test (OT) on MEWSS EDM with other IEWCS platforms.
- (U) ($107) Complete IEWCS equipment integration and factory testing.
- (U) ($25) Complete initial integration design of TACJAM-ECM subsystem.
- (U) ($320) Complete Environmental Control Unit and Auxiliary Power Unit design and installation.

- (U) ($115) Complete all subsystem installation.
- (U) ($340) Complete all antenna, radio frequency, and power distribution installation.
- (U) ($185) Complete Interference Cancellation design and installation.
- (U) ($450) Complete ILS documentation.
- (U) ($210) Conduct operator training.
- (U) ($200) Complete software development.
- (U) ($525) Complete ECM integration design.
- (U) The following accomplishments are funded under PE 0305885G, National Security Agency Tactical Cryptologic Program.
- (U) Integrate the TACJAM-Electronic Countermeasure (TACJAM-ECM) subsystem.
- (U) Conduct system Electro-Magnetic Interference/Electro-Magnetic Cancellation (EMI/EMC) testing.
- (U) Conduct DT/OT on MEWSS PIP.
- (U) Conduct Milestone IIA/Low Rate Initial Production (MS IIA/LRIP).

4. (U) FY 1997 PLAN:

- (U) ($190) Design the MEWSS system modification to allow targeting of additional advanced communications threats.
- (U) The following accomplishments are funded under PE 0305885G, National Security Agency Tactical Cryptologic Program.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT NUMBER: C1961 PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

- (U) Incorporate system antenna modifications to support TACJAM-ECM.
- (U) Install and test TACJAM-ECM subsystem.
- (U) Incorporate cellular subsystem.
- (U) Incorporate pre-planned modifications in single module downsizing.
- (U) Design mobile tactical Electronic Support Measures system.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT NUMBER: C1961 PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	0	2,558	N/A	N/A
(U) FY 1995 Appropriated:	N/A	2,558	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	-52	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	0	2,506	2,727	190

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 funding was decreased by a total of $52 for the following undistributed Congressional reductions: Small Business Innovative Research, University Research, and Travel.

(U) Schedule: The multi-service DT/OT was delayed one year, from the second/third quarter of FY 1995 to the second/third quarter FY 1996. This delay was caused by the non-availability of government furnished equipment to support test and software design delays at Electrospace Incorporated (ESI), Richardson, Texas, the prime contractor.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT NUMBER: C1961 PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

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

(U) RELATED RDT&E:

(U) PE 0604270A (IEWCS, TACJAM-A)
(U) MEWSS is fully integrated in the IEWCS program as a fourth platform.
(U) PE 0305885G (Tactical Cryptologic Program)
(U) The MEWSS program is joint with National Security Agency's Tactical Cryptologic Program, which provides a portion of the funds required for the system integration and development of the passive portion of TACJAM-A and the Precision Location System.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: C1961
PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q MS II		1Q MS IIA	1Q MS III	
Engineering Milestones	1Q PDR	3Q CDR PUBLISH IER	1Q LRIP		
T&E Milestones		LIMITED USER TESTING (ARMY) IOT&E - MEWSS PIP	2Q DT - EDM (MULTI-SERV) 3Q OT - EDM (MULTI-SERV) DT/OT - MEWSS PIP		
Contract Milestones	1Q EDM	2Q LRIP			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT NUMBER: C1961
PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	0	2,148	1,997	190
b. Integrated Logistics Support	0	128	450	0
c. Travel	0	30	30	0
d. Development Test/Operational Test	0	200	250	0
Total	0	2,506	2,727	190

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: C1961
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
ESI, Richardson, TX/Lockhead-Sanders, Nashua, NH	C/CPAF	OCT 88	6,667	6,667	6,667	0	0	0	0	0	6,667
ESI, Richardson, TX	C/CPAF	OCT 94	4,460	4,460	0	0	2,148	2,122	190	0	4,460
Support and Management											
CECOM, Ft. Monmouth, NJ/NISE-W, Vallejo, CA	C/CPFF	OCT 88	479	479	479	0	0	0	0	0	479
ETA, Stafford, VA	C/CPFF	OCT 94	453	453	0	0	128	325	0	0	453
MARCORSYSCOM, Quantico, VA	WR	OCT 94	60	60	0	0	30	30	0	0	60
Test and Evaluation											
ARMY PO/SALC, Sacramento, CA	WR	OCT 88	606	606	606	0	0	0	0	0	606
TECOM, Ft. Huachuca, AZ	WR	OCT 94	450	450	0	0	200	250	0	0	450

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: C1961
PROJECT TITLE: Mobile Electronic Warfare Support System (MEWSS)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	6,667	0	2,148	2,122	190	0	11,127
Subtotal Support and Management	479	0	158	355	0	0	992
Subtotal Test and Evaluation	606	0	200	250	0	0	1,056
Total Project	7,752	0	2,506	2,727	190	0	13,175

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E0556 EW COUNTER RESPONSE	31,728	24,485	3,314	2,693	2,624	3,173	3,198	3,278	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The EA-6B Weapon system is designed for jamming and destruction of enemy landbased, shipborne and airborne command, control and communications (C3) and radars associated with early warning, target acquisition surveillance, anti-aircraft artillery, and air-to-surface, surface-to-surface and surface-to-air missiles. In this capacity, it will support carrier based tactical aircraft and battle group operations in dense radar controlled environments. The efforts under this PE provide for the electronic countermeasure response to these advanced threat weapon systems and C3 networks which are expanding in density and technical complexity. This PE funds the continuing development and integration of all EW systems for the EA-6B Electronic Support Aircraft.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

(U) ($300 FY 1993 Funding) Completed wing fatigue study analysis.

- (U) ($2,477 FY 1993 Funding) Commenced development and integration of Universal Exciter Upgrade (UEU) into Improved Capability (ICAP) II aircraft.

- (U) ($8,193 FY 1993 Funding) Continued software and jammer techniques development and test support for ICAP-II development programs.

- (U) ($5,000 FY 1994 Funding) Commenced Joint Tactical Air Electronic Warfare Study (JTAEWS).

- (U) ($5,845 FY 1994 Funding) Commenced integration studies of ALQ-149 into EA-6B ICAP-II.

- (U) Completed delivery of Band 2/3 Engineering Development Models (EDM) 1 through 5.

- (U) ADVCAP terminated.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

2. (U) FY 1995 PLAN:

- (U) ($3,483 FY 1994 Funding & 2,556 FY 1995 Funding) Continue software and techniques development and test support for ICAP-II development programs.
- (U) Accept delivery of seven (7) UEU EDMs.
- (U) Complete ICAP-II UEU follow on test and evaluation (FOT&E) (OT-IIIA/SEP 95).
- (U) ($16,400 FY 1994 Funding) Complete the UEU development program and integration on ICAP-II.
- (U) ($1,000 FY 1994 Funding) Complete JTAEWS.
- (U) ($2,000 FY 1995 Funding) Commence low band transmitter development program.
- (U) ($3,000 FY 1995 Funding) Develop enhanced joint C2W capabilities associated with EF-111A termination.
- (U) Continue Coherent Countermeasures (COCM) and Proforma Countermeasures (PCM) programs for the EA-6B. Level of effort commensurate with available funds.

3. (U) FY 1996 PLAN:

- (U) ($2,929 FY 1995 Funding and $3,314 FY 1996 Funding) Continue software and techniques development, and test support for ICAP-II development programs.
- (U) ($12,000 FY 1995 Funding) Award low band transmitter development contract.
- (U) ($2,000 FY 1995 Funding) Conduct EA-6B follow-on system Cost and Operational Effectiveness Analysis (COEA) and risk reduction.
- (U) Continue COCM and PCM programs for the EA-6B. Level of effort commensurate with available funds.

4. (U) FY 1997 PLAN:

- (U) ($2,693) Continue software and techniques development and test support for ICAP-II development programs.
- (U) Continue COCM and PCM programs for the EA-6B. Level of effort commensurate with available funds.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget	15,328	20	XXX	XXX
(U) FY 1995 Appropriated:	XXX	25,020	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG	+16,400	(535)	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	31,728	24,485	3,314	2,693

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1994 increase of $16,400 reflects UEU development and integration costs. The decrease of 535K in FY-95 reflects the allocation of undistributed adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
APN-5 EA-6B P1 LINE ITEM 20	100,702	38,489	0	59,422	80,686	142,108	149,770	208,026	CONT	CONT

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT NUMBER: E0556 PROJECT TITLE: EW COUNTER RESPONSE

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones		4Q OT-IIIA(UEU)			
Contract Milestones			LOW BAND TX AWARD		LOW BAND TX OT-TBD

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Software & Techniques Dev. & Test	3,067	3,235	3064	2,443
b. Travel	416	250	250	250
c. Development Studies	11,845	0	0	0
d. UEU Development and integration costs	16,400	0	0	0
e. Joint C2W mission capability development (EF-111 termination)	0	3,000	0	0
f. Low Band transmitter	0	16,000	0	0
g. Follow-on system COEA and risk reduction	0	2,000	0	0
Total	31,728	24,485	3,314	2,693

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Method/ Fund Type Vehicle	Contract Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
Naval Research Labs	WX	OCT 95			3,130	1,000	3,000	600	619	CONT	CONT
NAWC	WX	OCT 95			770	2,972	6,235	1,400	1,200	CONT	CONT
AIL Sys Deer Park NY	SS/CPIF	JUN 92	52,417	51,800	37,972	13,828	0	0	0	0	51,800
TBD (Low Band TX)	TBD (C)	MAR 96	12,000	12,000	0	0	12,000	0	0	0	12,000
Misc (Efforts < $1M)	VARIOUS	OCT 95			30,140	1,683	3,250	1,314	874	CONT	CONT
Support and Management:											
JEWC TX	MIPR	JUL 94	5,420	5,420	0	5,420	0	0	0	0	5,420
NAWC	WX	JAN 95	580	580	0	580	0	0	0	0	580
Lockheed Sanders	SS/FP	AUG 94	5,845	5,845	0	5,845	0	0	0	0	5,845
Test and Evaluation:											
NAWC	WX	DEC 94	400	400	0	400	0	0	0	0	400

GOVERNMENT FURNISHED PROPERTY: Not applicable

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT
PROJECT NUMBER: E0556
PROJECT TITLE: EW COUNTER RESPONSE

	TOTAL FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	72,012	19,483	24,485	3,314	2,693	CONT	CONT
Subtotal Support and Management	0	11,845	0	0	0	0	11,845
Subtotal Test and Evaluation	0	400	0	0	0	0	400
Total Project	72,012	31,728	24,485	3,314	2,693	CONT	CONT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2175 Tactical Air Electronic Warfare	76,186	73,074	78,310	106,755	98,275	85,862	36,587	33,641	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: INTEGRATED DEFENSIVE ELECTRONIC COUNTERMEASURES (IDECM): This subproject integrates a Radar Warning Receiver (RWR), a countermeasures dispenser system, a decoy, a new techniques generator, a Missile Approach Warning System (MAWS), and advanced expendables with associated cockpit displays to provide the lead aircraft (F/A-18E/F) with increased survivability against Infrared/Radio Frequency (IR/RF) threats.

(U) AN/ALR-67(V)3 RADAR WARNING RECEIVER: This subproject will develop the system which provides enhanced situational awareness by providing accurate azimuth display of all programmed threats, independent of aircraft attitude, and a new Electronic Warfare (EW) Bus Controller.

(U) DOA AN/ALR-67 Direction of Arrival (DOA): This subproject will develop a method to achieve Navy Tactical Air's (TACAIR's) requirements for passive precision ranging/targeting. The DOA will contribute to multi-sensor integration targeting solutions by providing air-to-ground passive emitter location and air-to-air precision direction finding.

(U) AN/ALE-50 ADVANCED AIRBORNE EXPENDABLE DECOY (AAED): This subproject will develop the system which will decoy enemy radio frequency homing missiles away from friendly aircraft.

(U) FLEET ELECTRONIC WARFARE SUPPORT GROUP (FEWSG): This subproject develops new EW equipment and technology which is used to provide realistic hostile EW threat environment, and support the evaluation and development of tactics and training.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

(U) EW SOFTWARE SUPPORT ACTIVITY (EWSSA): This subproject provides upgrade to lab facilities which provide software support to EW systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($60,230) ALR-67(V)3: Completed Operational Assessment and Acquisition Review Board for test asset procurement to support OPEVAL. Commenced Development Test/Operational Test (DT/OT) flight testing. Continued EMD.
- (U) ($6,552) AAED: Conducted DT/OT Live Fire on Decoy. Began development. IDAP: Closed out program with live fires as risk reduction for IDECM program.
- (U) ($5,060) IDECM: Tasked and funded field support to initiate program related documentation including Statements of Work (SOW), specifications. Participated in Cost and Operational Effectiveness Analysis (COEA) efforts. Conducted F-18 EW COEA; awarded a McDonnell Douglas (MCAIR) A-Kit study contract for first look at integration into F/A-18E/F.
- (U) ($1,892) FEWSG: Continued AN/ALQ-170 dual mode development. Initiated FEWSG Airborne Electronic Warfare Systems (FAEWS) Electronic Support Measures (ESM) upgrades. Initiated Adaptive Cross Polarization development for AN/ALQ-167. Completed airborne intercept development. Initiated pre-launch lock-on development. Initiated dual mode transmit development for AN/AST-6.
- (U) ($200) EWSSA: Continued software development and development of EWSSA Lab facilities. Automated the user data file (threat file).
- (U) ($500) APR-39 (XE-2): Completed DT and began OT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

- (U) ($480) AN/ALE-47: Conducted engineering and development of AN/ALE-47 extended dispenser assemblies and component item breakout and completed development and testing of the interface hardware and software for the AN/ALE-47 to program GEN-X.

- (U) ($1,272) Included travel and Management/Professional Support Services.

2. (U) FY 1995 PLAN:

- (U) ($22,645) ALR-67(V)3: Complete DT/OT flight testing. Develop Consolidated Automated Support System Test Program Sets (CASS TPS) (2nd increment). Update contractor system to support OPEVAL. Develop Software Support Activity (SSA). Continue Logistics Development.

- (U) ($4,000) DOA ALR-67: Begin development of a Direction of Arrival (DOA) Improvement Program.

- (U) ($16,531) AAED: Complete OT on decoy; begin integration efforts on F-18 E/F.

- (U) ($24,944) IDECM: Award contract for Engineering and Manufacturing Development of the IDECM RF subsystem. Conduct risk reduction studies and testing on the RF subsystem. Conduct MCAIR A-Kit study contract efforts for RF integration into the AV-8B/F/A-18, and support for MAWS/Advanced Strategic Tactical Expendable (ASTE) source selection and initial integration.

- (U) ($2,829) FEWSG: Complete AN/ALQ-170 dual mode development. Continue FAEWS/ALT-40 upgrades. Complete ALQ-167 adaptive Cross Polarization development. Continue dual mode transmit development for AN/AST-6. Complete pre-launch lock-on development for AN/AST-6. Initiate AN/ALQ-167 E/F-Band deception technique development. Continue equipment exploitation. Initiate AN/ALQ-167 I-Band digital RF memory development.

- (U) ($200) EWSSA: Continue software development and development of EWSSA Lab facilities.

- (U) ($250) AN/ALE-47: Complete all training of AN/ALE-47 SSA personnel and certify organic capability. Complete development and test of AN/ALE-47 extended dispensers for kinematic expendables.

- (U) ($1,600) APR-39 (XE-2): Continue and complete OT.
- (U) ($75) Includes travel and Management/Professional Services Support.

3. (U) FY 1996 PLAN:

- (U) ($51,042) IDECM: Continue funding contract for Engineering and Manufacturing Development of the IDECM RF subsystem. Continue MCAIR A-Kit design contract efforts for integration into the AV-8B/F/A-18 and MAWS/ASTE integration efforts.
- (U) ($14,800) ALR-67(V)3: Conduct OPEVAL, fix any deficiencies, set up software support facility and complete design changes necessary for F-18E/F installation.
- (U) ($3,000) DOA ALR-67: Continue development of DOA program.
- (U) ($6,732) AAED: Continue developmental test, TECHEVAL and OT for F-18E/F installation.
- (U) ($2,536) FEWSG: Complete FAEWS/ALT-40 system upgrades. Complete AST-6 dual mode transmit development. Complete AST-6 pre-launch lock-on development. Complete AN/ALQ-167E/F Band Deception Technique Development. Continue AN/ALQ-167 I-Band Digital RF Memory Development. Initiate AN/ALQ-167 Pulse-to-Pulse Frequency Set-on Development. Continue equipment exploitation. Initiate AN/ALQ-170 performance enhancement effort.
- (U) ($200) EWSSA: Continue software development and development of EWSSA lab facilities.

4. (U) FY 1997 PLAN:

- (U) ($68,221) IDECM: Continue funding contract(s) for Engineering and Manufacturing Development of the IDECM RF subsystem. Continue MCAIR A-Kit design contract efforts for integration into the F/A-18 and MAWS/ASTE integration efforts.
- (U) ($15,256) DOA ALR-67: Continue development of DOA program via contract and field support.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

- (U) ($20,567) AAED: Completion of OT for F-18E/F. Commence FOT&E for F-18. Logistics development of CASS, Depot, and I-Level.
- (U) ($2,511) FEWSG: Complete AN/ALQ-167 I-Band Digital RF Memory Development. Continue AN/ALQ-167 Pulse-to-Pulse Frequency Set-on Development. Continue AN/ALQ-170 performance enhanced effort. Continue equipment exploitation.
- (U) ($200) EWSSA: Continue software development and development of EWSSA lab facilities.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	76,186	75,355	xxx	xxx
(U) FY 1995 Appropriated:	xxx	75,355	xxx	xxx
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:		(2,281)		
(U) FY 1996/97 PRESBUDG Submit:	76,186	73,074	78,310	106,755

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decreases reflect Department of the Navy rebalancing, pricing, and DBOF rate adjustments.

(U) Schedule: IDECM MS III changed from 3Q/01 (President's Budget) to 3Q/02 due to acquisition strategy realignment. LRIP planned for 2Q/01. ALR-67(V)3 MS IIA changed from 4Q 1995 to 2Q 1996. OPEVAL start changed from 4Q 1995 to 2Q 1996. MS III changed from 3Q 1996 to 2Q 1997. Changes to schedule are to reflect revised acquisition program baseline agreement and additional testing requirements for the F/A-18.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN Line 43 - AN/ALR-67(V)3	0	0	0	31,974	45,280	37,942	37,629	10,000	602,993	728,189
(U) APN Line 43 - DOA AN/ALR-67	0	0	0	0	0	9,737	19,655	20,000	240,000	289,392
(U) APN Line 36 - FEWSG	11,506	8,868	550	470	90	94	97	100	0	130,959
(U) APN Line 43 - IDECM	0	0	0	0	0	10,224	11,302	51,081	107,760	180,367

(U) RELATED RDT&E:

(U) PE 0603270N (Advanced EW Technology)
(U) PE 0604256N (Threat Simulator Development)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	3Q Navy SSA Facility Complete 3Q AAED CDR	3Q Navy SSA Operational	2Q AAED DECOY MS III 2Q ALR-67(V)3 MS IIA	1Q ALR-67 DOA CDR 2Q ALR-67(V)3 MS III	2Q/98 AAED SYS MS III 3Q/00 ALR-67 DOA MS III
		3Q IDECM MS II			2Q/01 IDECM LRIP 3Q/02 IDECM MS III
Engineering Milestones	3Q GENX Interface Complete 3Q ALR-67(V)3 DCR	3Q Extended Disp Complete			
T&E Milestones	3Q ALR-67(V)3 TECHEVAL		2Q ALR-67(V)3 OPEVAL		3Q/98 ALR-67 DOA DT 3Q/99 ALR-67 DOA OT
	4Q AAED DECOY DT/OT		1Q AAED DECOY OPEVAL	1Q AAED SYS DT	1Q/98 AAED SYSTEM OPEVAL 1Q/99 AAED SYS FOT&E 1Q/00 IDECM DT 1Q/01 IDECM OT 3Q/02 IDECM DT II
Contract Milestones		3Q AAED DECOY OPT III	1Q AAED DECOY LRIP		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	42,645	28,954	46,956	79,220
b. Software Development	440	3,245	1,663	750
c. Systems Engineering	11,268	15,571	15,179	11,524
d. Developmental Test & Evaluation	1,169	1,457	1,000	7,000
e. Operational Test & Evaluation	1,211	6,503	5,317	3,000
f. Developmental Support Equipment Acquisition	3,000	6,625	825	195
g. Integrated Logistics Support	1,115	2,159	2,450	1,400
h. Cost Analysis	878	927	275	100
i. Training	250	50	100	0
j. Quality Assurance	0	0	0	100
k. Configuration Management	0	50	50	150
l. Research Personnel	2,933	4,200	1,500	300

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
m. Reliability and Maintainability	6,300	375	375	495
n. Program Management Support	1,769	1,814	1,872	1,931
o. Travel	229	430	420	270
p. Miscellaneous	2,979	714	328	320
Total	76,186	73,074	78,310	106,755

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
HUGHES	SS-FFP-MIPR	6/94	45,922	45,922	0	45,245	677	0	0	0	45,922
HUGHES	C-FPI-MIPR	8/89	63,051	63,051	43,700	4,151	11,700	3,500	0	0	63,051
TBD	TBD	TBD	TBD	TBD	0	0	0	0	10,446	46,820	57,266
GRUMMAN	CPI-MIPR	TBD	1,000	1,000	0	0	500	500	0	0	1,000
RAYTHEON	C-FFP-MIPR	7/88	29,496	29,496	12,426	3,700	10,456	2,914	0	0	29,496
RAYTHEON	TBD	TBD	TBD	TBD	0	0	0	0	9,053	1,604	10,657
MCAIR	TBD	TBD	TBD	TBD	0	0	5,139	12,400	37,100	61,600	116,239
TBD	TBD	TBD	TBD	TBD	0	0	14,785	31,242	22,821	42,699	111,547
TBD	TBD	TBD	TBD	TBD	0	0	0	1,450	0	2,050	3,500
TBD	TBD	TBD	TBD	TBD	0	0	0	1,300	1,300	0	2,600
NAWC-WD/PTM	WX	10/95				16,487	20,058	16,629	12,004	CONT.	CONT.
Support and Management											
RAVEN						1,769	1,814	1,872	1,931	6,088	13,474
MISCELLANEOUS (EFFORTS < $1M EACH)						3,165	2,185	2,203	2,100	2,604	12,257

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation											
NAWC-AD/PAX (DT)	WX	10/95				1,169	1,457	1,000	7,000	9,129	19,755
OPTEVFOR (OT)	WX	10/95				500	4,303	3,300	3,000	18,600	29,703

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	56,126	69,583	63,315	69,935	92,724	154,773	506,456
Subtotal Support and Management		4,934	3,999	4,075	4,031	8,692	25,731
Subtotal Test and Evaluation		1,669	5,760	4,300	10,000	27,729	49,458
Total Project	56,126	76,186	73,074	78,310	106,755	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R1742 EW Technical Development and Testing	832	844	755	736	742	909	914	940	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program, referred to as "Skunkworks", establishes a standing research group for developing and testing low cost, high payoff electronic warfare (EW) systems to meet warfighting requirements during crisis situations. The program typically produces a new product at the end of each 12 month period. This unique characteristic ensures that the team continually functions in a quick reaction mode, and is therefore well trained in all aspects of rapid response systems engineering and fabrication. Each year, in the absence of a critical situation, the team develops, demonstrates and tests a prototype EW system which meets a specific Navy requirement.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:
   - (U) ($500) Obtained developmental flight clearance for launchers for Also obtained developmental clearance for pod with Procured for testing.
   - (U) ($332) Developed detailed test plan scenarios. Coordinated plan with Technical Support Group (N3/5) and Air Force. Conducted test. Initial results show significant capabilities

2. (U) FY 1995 PLAN:
   - (U) ($629) Develop a miniature capable of countering

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1742
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: EW Technical Development

- (U) ($215) Plan and conduct laboratory demonstrations. Plan and conduct system field tests.

3. (U) FY 1996 PLAN:
   - (U) ($250) Perform systems engineering required to on a helo platform to support Navy Command and Control Warfare requirements.
   - (U) ($335) Evaluate applicability of selected subsystems from existing programs to meet requirements. Select, acquire, configure, integrate and laboratory test required modules.
   - (U) ($170) Plan and conduct field tests.

4. (U) FY 1997 PLAN:
   - (U) ($321) Perform systems engineering to configure a
   - (U) ($300) Design, fabricate and integrate changes to
   - (U) ($115) Plan and conduct laboratory and field tests of the modified ITD system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	832	846	XXX	XXX
(U) FY 1995 Appropriated:	XXX	846	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-2	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	832	844	755	736

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT NUMBER: R1742 PROJECT TITLE: EW Technical Development

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 funding reduction is due to congressional undistributed cuts for university research (-1), and travel (-1).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: R1742
PROJECT TITLE: EW Technical Development

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Government Laboratory Personnel Support	286	394	300	300
b. Contractor Personnel Support	42	0	35	21
c. Major Contracts	43	50	200	200
d. Material	255	150	50	100
e. Testing	196	200	150	100
f. Miscellaneous	10	50	20	15
Total	832	844	755	736

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1742
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: EW Technical Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

Contractor/ Government Performing Activity	Contract Method Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
MISC	MISC	MISC	616	616	4,600	616	624	619	511	Cont.	Cont.
Support and Management											
MISC	MISC	MISC	20	20	155	20	20	25	25	Cont.	Cont.
Test and Evaluation											
MISC	MISC	MISC	196	196	1,580	196	200	111	200	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: R1742
PROJECT TITLE: EW Technical Development

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	4,600	616	624	619	511	Cont.	Cont.
Subtotal Support and Management	155	20	20	25	25	Cont.	Cont.
Subtotal Test and Evaluation	1,580	196	200	111	200	Cont.	Cont.
Total Project	6,335	832	844	755	736	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R1882 Data Link Vulnerability Analysis (DVAL)	1,165	1,018	1,040	1,043	1,002	1,013	1,016	1,046	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: DVAL is an Office of the Secretary of Defense directed program with the Commander, Naval Security Group designated as Executive Agent. It is the only program in the Navy that evaluates anti-jam and low probability of intercept (LPI) capabilities in Navy systems using the electromagnetic spectrum. DVAL typically assesses systems during the developmental stages of the acquisition cycle. It identifies methods for reducing signal vulnerabilities to hostile exploitation. It is also employed after fleet introduction for use in developing countermeasure tactics. In FY 1994 it will incorporate another facet of vulnerability assessment, an Electronic Counter-Countermeasures (ECCM) Requirements and Assessment Manual (ERAM) which, when completed, will provide a tool for program sponsors and managers to clearly state ECCM requirements "up front" in the R&D process. ERAM consists of five manuals (increments) providing realistic engagement scenarios and measures of effectiveness to facilitate writing of contract specifications, defining of testing environments, and provision of tools for fleet training and tactics.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:
   - (U) ($330) Completed pre-test analysis of Battle Group Cooperative Engagement Concept (BGCEC) and TACINTEL II/INSICOM. Initiated actions to perform susceptibility assessments of these systems.
   - (U) ($360) Developed test plan and equipment necessary for the assessment of Navy Extremely High Frequency (EHF) Satellite Program (NESP) terminals. These terminals allow communications via the MILSTAR satellite system.
   - (U) ($475) Published ERAM Increment V; produced draft of Joint Army/Navy developed ERAM Communications Annex; release revision 2, ERAM Increment III, released revision 3, ERAM Increment II.

2. (U) FY 1995 PLAN:
   - (U) ($90) Complete susceptibility assessments of BGCEC and TACINTEL II/INSICOM.

- (U) ($60) Complete test plan and procedures for vulnerability test of NESP terminals. Conduct interim tests in preparation for at-sea test in FY 1996.
- (U) ($100) Assess synchronization algorithm of SINCGARS radio for susceptibility.
- (U) ($120) Perform susceptibility and interceptibility pretest analysis of MILSTAR Medium Data Rate (MDR) waveform.
- (U) ($98) Assess radio developed in a special access program for utility in LPI communication for the Navy.
- (U) ($150) Test airplane LPI radio being developed by NAVAIRSYSCOM and NRAD for evaluation in an advanced technology demonstration program.
- (U) ($400) Publish ERAM Communications Annex; release revision 4, Eram Increment I; release revision 1, ERAM Increment IV.

3. (U) FY 1996 PLAN:
   - (U) ($125) Conduct vulnerability tests of Advanced Engineering Model (ADM) of BGCEC.
   - (U) ($175) Conduct at-sea test of NESP terminals and complete test report.
   - (U) ($100) Complete analysis of tests of LPI radios tested in FY 1995.
   - (U) ($140) Continue analysis of MILSTAR MDR vulnerability.
   - (U) ($100) Begin vulnerability analysis of submarine vulnerability using sub-high frequency (SHF) communications.
   - (U) ($400) Release revision 1 of ERAM Increment V. Publish Annex to ERAM Increment II on Airborne Surveillance & C3 Systems.

4. (U) FY 1997 PLAN:
   - (U) ($150) Complete test and analysis of ADM of BGCEC.
   - (U) ($150) Complete assessment of submarine vulnerability when using SHF communications.
   - (U) ($243) Complete analysis of MILSTAR MDR susceptibility and interceptibility. Begin test design phase.
   - (U) ($100) Begin assessment of high frequency radio group.
   - (U) ($400) Publish revision 1 to ERAM Increment V; revision 3 to ERAM Increment III and revision 2 to ERAM Increment IV.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1882
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: DVAL

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,165	1,201	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,201	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-183	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	1,165	1,018	1,040	1,043

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 funding reduction is due to congressional undistributed cuts for university research (-171), travel (-1), and cut for SBIR (-11).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:
(U) PE 0603261N (Tactical Airborne Reconnaissance)

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: R1882
PROJECT TITLE: DVAL

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Developmental Test and Evaluation	1,165	1,018	1,040	1,043
Total	1,165	1,018	1,040	1,043

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: R1882
PROJECT TITLE: DVAL

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

Contractor/ Government Performing Activity	Contract Method Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development: Not applicable.											
Support and Management: Not applicable.											
Test and Evaluation											
SPAWAR	Reqn	N/A	N/A	N/A	7,000	690	618	640	643	Cont.	Cont.
NAWC	WR	N/A	N/A	N/A	900	475	400	400	400	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1882
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: DVAL

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	0	0	0	0
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	7,900	1,165	1,018	1,040	1,043	Cont.	Cont.
Total Project	7,900	1,165	1,018	1,040	1,043	Cont.	Cont.

C. Funding Profile: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2260 Specific Emitter Identification	0	0	1,294	1,095	1,592	1,890	2,089	2,089	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This new start project is for systems for collection of specific emitter identification information from National Technical Means (NTM) and during choke point monitoring in order to track commercial ships over 500 GT world-wide. Research and development will cover classic and Unintentional Modulation of Pulse (UMOP) Electronic Intelligence (ELINT) technology. This will include improved/next generation Specific Emitter Identification (SEI) technology for: miniaturization and automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Propagation loss and multi-path signal distortions will be assessed. Fundamental limits to ELINT applied to commercial shipping will be assessed and alternatives will be pursued if warranted, and as directed by ONI and NSA.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1995 PLAN: Not applicable.

3. (U) FY 1996 PLAN:
   - (U) ($1,294) Work will begin on the fundamental problem of automatically extracting SEI information from received signals and transmitting the necessary information to the reporting center. Signals must be received with sufficient time resolution and precision to allow extraction of high resolution classical parameters or precise UMOP characteristics. Various concepts will be assessed and the best approach will be chosen for further development by the end of the year. The effect on emmitter signature of multipath and propagation and our ability to measure the signals with the required precision (signal to noise ratio) will be analyzed with an assessment of feasibility by the end of the year.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: EW Development PROJECT TITLE: Specific Emmitter ID

4. (U) FY 1997 PLAN:
   - (U) ($1,095) Brassboard realization of the concepts for automated signal preparation and processing chosen in FY 1996 will be developed and tested using data collected during choke point monitoring. A report on the performance of the brassboards will be released by the end of the year. The analysis of the effects of multi-path and propagation loss performed in FY 1996 will be tested in the field and a report extrapolating the test results to the orbits of the NTM will be written.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	0	0	XXX	XXX
(U) FY 1995 Appropriated:	XXX	0	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	0	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	0	0	1,294	1,095

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Not applicable.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: EW Development PROJECT TITLE: Specific Emmitter ID

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

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: EW Development PROJECT TITLE: Specific Emmitter ID

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Government Engineering Support	0	0	518	438
b. Contractor Engineering Support	0	0	776	657
Total	0	0	1,294	1,095

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: EW Development

PROJECT NUMBER: R2260
PROJECT TITLE: Specific Emmitter ID

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Miscellaneous	N/A	N/A	N/A	N/A	0	0	0	1,294	1,095	Cont.	Cont.

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: EW Development PROJECT TITLE: Specific Emmitter ID

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	0	0	0	1,294	1,095	Cont.	Cont.

C. (U) FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Combat System Improvements	75,994	76,317	90,026	88,770	89,854	110,026	105,126	98,158	CONT.	CONT.
K1776 AEGIS Weapon System Mods	2,653	4,705	4,713	4,915	5,222	4,749	4,647	4,791	CONT.	CONT.
K1937 DDG Weapons Development	23,985	9,885	10,944	4,675	0	0	0	0	0	182,160
TOTAL	102,632	90,907	105,683	98,360	95,076	114,775	109,773	102,949	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The AEGIS Combat System provides immediate and effective capability to counter the current and expected air, surface and sub-surface threats as articulated in Office of Naval Intelligence (ONI) System Threat Assessment Report, ONI TA #046-93 dated May 1993. Changes in the threat capability and advances in technology such as fiber optics, local area networks, and high performance computing require corresponding Weapon System and Combat System changes. This program provides the Combat System engineering and selected weapons development necessary for such a continued increase in the capability of the AEGIS Combat System in AEGIS cruisers and destroyers. In addition to developing and integrating improvements to the AEGIS Weapon System, it will integrate combat capabilities developed in other Navy R&D programs into the AEGIS Combat System. Modifications of AEGIS Weapon System computer programs must be made to integrate these capabilities into the AEGIS Combat System so that battle effectiveness will be retained against the evolving threat. Selected Weapon and Combat System upgrades will be backfitted into CG 47 Class and DDG 51 Class ships already in the Fleet, providing key warfighting capability while reducing life cycle maintenance costs.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Combat System Improvements	75,994	76,317	90,026	88,770	89,854	110,026	105,126	98,158	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides AEGIS Cruiser and Destroyer Combat System upgrades to integrate new equipments and systems to maintain pace with the threat and to capture advances in technology such as fiber optics and distributed architecture. The ships are upgraded in blocks and the Combat System in baselines. Baseline 2 (CG 52-58) consisted of the Vertical Launching System, TOMAHAWK Weapon System, and Anti-Submarine Warfare upgrades. Baseline 3 (CG 59-64) included the AN/SPY-1B radar and AN/UYQ-21 consoles. Baseline 4 (CG 65-73) integrated the AN/UYK-43/44 computers with superset computer programs developed for the DDG 51. Baseline 4 is the base Combat System for DDG 51-67. Baseline 5 was introduced in FY 1992 ships and included the Joint Tactical Information Distribution System (JTIDS)/Command and Control Processor, Tactical Data Information Link J, Combat Direction Finding, Tactical Data Information Exchange System, AN/SLQ-32(V)3 Active Electronic Countermeasures and AEGIS Extended Range (ER) Missile. Baseline 5 is being developed in three steps (phases): Phase I integrated AEGIS ER and supports the missile Initial Operational Capability; Phase II integrated system upgrades including Deceptive Electronic Countermeasures, Track Load Control algorithms, and Track Initiation Processor; and Phase III is integrating JTIDS and the OJ-663 color display Tactical Graphics capability into the AEGIS Combat System. Baseline 6 will also be developed in phases. Baseline 6 Phase I is planned for the last ship in FY 1994, and Phase II is planned for the last ship in FY 1996. Baseline 6 upgrades will include embarked helicopters, Fiber Optics as applied to Data Multiplexing System (DMS), implementation of affordability initiatives, the Radar Set Controller Environment Simulator (RSCES) and Battle Force Tactical Trainer (BFTT), Advanced Display System (Congressionally mandated but not funded), Display Simplification Initiative (DSI), Evolved SEASPARROW Missile (ESSM), Tactical Information Communications Analyzer (TICA), Identification (ID) upgrades Phase I, Advanced TOMAHAWK Weapon Control System (ATWCS) Phase II, and Fire Control System upgrades. AN/SPY-1D radar upgrades will be introduced for serial production in the last ship in FY 1998. Baseline 7 upgrades, planned for the last ship in FY 2000, include: integration of Cooperative Engagement Capability (CEC) and Tactical Ballistic Missile Defense (TBMD) capability (first forward fit implementation/funding will be provided from other sources), advanced computer architecture, ID upgrades Phase II, Cueing Sensor, STANDARD Missile-2 Block IIIB, Light Airborne Multipurpose System (LAMPS) helicopter Mark III Block II, and Mark 50 torpedo with Periscope Depth Attack.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($400) Resolved problems identified during Combat System Engineering Development (CSED) Site system demo of Baseline 5 Phase I.
- (U) ($12,600) Completed Baseline 5 Phase II computer program coding, debugging and testing, and performed the Systems Qualification Test (SQT) at the CSED Site.
- (U) ($12,235) Conducted Baseline 5 Phase III Critical Design Review (CDR) and commenced computer program coding, debugging and testing at the CSED Site to integrate Baseline 5 Phase III into the AEGIS Combat System.
- (U) ($24,116) Conducted Baseline 6 Phase I System Design Review (SDR). Started reengineering of OJ-663 Tactical Graphics Console display equipment and single cable Local Area Network (LAN) into ruggedized commercial components and standards (Display Simplification). Commenced Baseline 6 Phase I design specifications.
- (U) ($6,000) Provided the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) ($20,643) Provided for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

2. (U) FY 1995 PLAN:

- (U) ($15,800) Design and integrate ID Upgrade Phase I and Battle Force Tactical Trainer (BFTT) ACTS rehost, for Baseline 6 Phase I; engineer Adjunct Processor for Baseline 6 Phase II; and engineer and develop an Advanced Computing Engineering Development Model to support implementation of an open system networked architecture.
- (U) ($20,000) Complete computer program coding, debugging and testing to integrate Baseline 5 Phase III into the AEGIS Combat System. Conduct integration of Baseline 5 Phase III at the CSED Site and conduct SQT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

- (U) ($9,200) Continue Baseline 6 Phase I design specifications and conduct Preliminary Design Review (PDR). Initiate rehosting of AEGIS Display System (ADS) and Command and Decision (C&D) display related computer programs into Display Simplification architecture.

- (U) ($3,600) Start system engineering and coding, debugging and testing of a new computer/console architecture (DSI) for Baseline 6 Phase II.

- (U) ($2,600) Start integration of SPY-1D radar upgrade (SPY-1D(V), formerly known as EDM-4B) into the AEGIS Weapon System.

- (U) ($1,300) Begin system engineering and development of an advanced computing Engineering Development Model (EDM) to support implementation of an open system networked architecture in Baseline 7.

- (U) ($7,200) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.

- (U) ($16,617) Continue to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

3. (U) FY 1996 PLAN:

- (U) ($2,900) Complete Baseline 5 Phase III integration and resolve any problems identified during CSED Site demo.

- (U) ($26,800) Conduct Baseline 6 Phase I CDR-1 and CDR-2. Perform computer program coding, debugging and testing. Start rehosting of AEGIS Combat Training System (ACTS) computer programs for BFTT Phase I and initiate development of BFTT/ACTS interface. Complete reengineering and development of OJ-663 display equipment and LAN to ruggedized commercial components and standards including a dual fiber optics LAN. Start rehosting ADS and C&D display and ID related computer programs (Display Simplification). Start development of Baseline 5 Phase III computer program variant to support equipment acceptance for first Baseline 6 Phase I ship (DDG 79).

- (U) ($14,950) Conduct system definition for Baseline 6 Phase II. Continue ESSM integration efforts. Start system engineering.

- (U) ($4,900) Begin rehost of SPY-1D radar upgrade computer program control loop into advanced processors.
- (U) ($12,650) Continue system engineering and development of an advanced computing EDM to support implementation of an open system networked architecture in Baseline 7.
- (U) ($7,200) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) ($20,626) Continue to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

4. (U) FY 1997 PLAN:

- (U) ($18,600) Complete Baseline 6 Phase I computer program coding, debugging and testing. Start integration into the AEGIS Combat System at the CSED Site. Continue rehosting of ACTS computer programs for BFTT Phase I C&D ID related computer programs. Complete development of Baseline 5 Phase III computer program variant for Baseline 6 Phase I equipment. Conduct Production Test Center testing with Baseline 5 Phase III variant and DDG 79 ship set.
- (U) ($23,247) Conduct SDR and PDR for integration of Baseline 6 Phase II upgrades into the AEGIS Combat System. Continue system engineering. Continue ESSM integration. Complete development of advanced processor acceptance rack (CITADEL).
- (U) ($10,600) Complete SPY-1D radar upgrade and interface simulation computer program rehost and begin system definition for SPY-1D radar upgrade computer program.
- (U) ($8,000) Conduct system definition to integrate Baseline 7 upgrades into the AEGIS Combat System. Start system engineering.
- (U) ($7,200) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) ($21,123) Continue to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT NUMBER: K1447 PROJECT TITLE: Combat System Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	75,994	79,044	XXX	XXX
(U) FY 1995 Appropriated:	XXX	79,044	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-2,727	XXX	XXX
(U) FY 1996/97 OSD Budget Submit:	75,994	76,317	90,026	88,770

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: In FY 1995 $15,800 has been withheld pending reprogramming. Funding is being decreased by $2,727 in FY 1995 to accommodate cuts in university research, consulting services, and travel, and to support Small Business Innovative Research (SBIR).

(U) Schedule: Baseline 6 is now being developed in two phases. Milestones previously reported for Baseline 6 now apply to Baseline 6 Phase I. The Baseline 6 Phase I PDR has been rescheduled from September 1994 to the Second Quarter of FY 1995 and CDR from March 1995 to the First Quarter of FY 1996. To accommodate the $15,800 OSD withholding in FY 1995, computer program design and integration to support the ID upgrade and BFTT functionality will be delayed one year. A second CDR will be scheduled in the Fourth Quarter of FY 1996 to validate the ID upgrade and BFTT designs, restarted in FY 1996 with the restoration of funds, and enable the start of coding. It is anticipated that internal milestones can be adjusted to enable the Baseline 6 Phase I computer program to support Combat System activation of DDG 79. Significant schedule risk, however, is introduced to successor baselines which depend upon the development of Baseline 6 Phase I in accordance with the initial schedule. Delayed completion of Baseline 6 Phase I causes concurrent development with two successor baseline efforts which may result in schedule slippage, resultant cost growth, and shipbuilding contract impact. Baseline 7, initially planned for an FY 1999 ship, will now be introduced in the last ship in FY 2000.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

(U) Technical: Baseline 6 Phase I has been defined to include embarked helicopters, Fiber Optics as applied to DMS, implementation of affordability items, BFTT, ID upgrades Phase I, and DSI. Baseline 6 Phase II includes TICA, Advanced Display System (Congressionally mandated but not funded), ATWCS Phase II, RSCES, ESSM, and upgrades to the Fire Control System. Baseline 7 includes advanced processing, integration of CEC and TBMD capability (first forward fit implementation/funding will be provided from other sources), ID upgrades Phase II, Cueing Sensor, STANDARD Missile-2 Block IIIB, LAMPS Mark III Block II, and Mark 50 torpedo with Periscope Depth Attack. To accommodate the pending OSD reduction of $15,800 in FY 1995, the following changes have been made to Baseline 6 Phase I: (1) Rehosting of ACTS computer programs for BFTT Phase I and rehosting of ID upgrade related computer program into adjunct processors will be delayed one year. (2) A variant to the Baseline 5 Phase III computer program will be developed to permit Production Test Center acceptance of Baseline 6 Phase I equipment for DDGs 79 through 81. The result is cost growth to the total Baseline 6 Phase I effort. Delay of completion of Baseline 6 Phase I causes concurrent development with Baseline 6 Phase II, which could result in schedule slippage and possible shipbuilding contract impact. Adjunct processor engineering required to support the warfighting upgrades in Baseline 6 Phase II will be delayed by one year.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122	2,637,872	2,642,008	2,169,257	2,857,085	2,379,218	3,180,783	3,215,594	3,338,727	CONT.	CONT.
(U) OPN LI5246	29,304	36,353	64,288	34,894	26,878	53,926	39,788	41,323	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

(U) RELATED RDT&E:

(U) PE 0603216C (Theater Ballistic Missile Defense)
(U) PE 0603382N (Advanced Combat System Technology)
(U) PE 0603755N (Ship Self Defense)
(U) PE 0604216C (Theater Ballistic Missile Defense)
(U) PE 0604366N (Standard Missile Improvements)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones	2Q B/L5 PHIII CDR 3Q B/L6 PHI SDR 4Q B/L5 PHII SQT	2Q B/L6 PHI PDR 4Q B/L5 PHIII SQT	1Q B/L6 PHI CDR-1 4Q B/L6 PHI CDR-2	2Q B/L6 PHII SDR 4Q B/L6 PHII PDR	CONT.
T&E Milestones					
Contract Milestones	3Q B/L5 PHIII Award	2Q LOE B/L Award			CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Engineering	61,956	63,279	73,813	72,179
b. Gov. Engineering Spt.	13,305	11,956	14,801	14,951
c. Pgm. Management Spt.	508	450	780	780
d. Development Test and Eval.	225	632	632	860
Total	75,994	76,317	90,026	88,770

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Martin Marietta, Moorestown, NJ	SS/CPFF	03/93	573,819	573,819	37,143	40,943	42,685	67,675	68,100	317,273	573,819
Applied Physics Lab (APL), Baltimore, MD	SS/CPFF	02/94	33,336	33,336	0	5,625	2,794	4,438	4,079	16,400	33,336
McClellan AFB, CA	MIPR	01/94	18,100	18,100	0	14,400	2,000	1,700	0	0	18,100
Navy Surface Warfare Center, Dahlgren, VA	WR	10/93	64,646	64,646	0	8,150	5,950	8,300	8,934	33,312	64,646
Vitro Corp., Silver Spring, MD	C/CPFF	10/92	37,171	37,171	2,886	2,575	4,500	4,500	4,500	18,210	37,171
OSD Deferral			15,800	15,800	0	0	15,800	0	0	0	15,800
Miscellaneous			19,261	19,261	0	3,568	1,506	2,001	1,517	10,669	19,261
Support and Management											
Miscellaneous			5,638	5,638	0	508	450	780	780	3,120	5,638
Test and Evaluation											
Miscellaneous			6,529	6,529	0	225	632	632	860	4,180	6,529

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Combat System Improvements

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	40,029	75,261	75,235	88,614	87,130	395,864	762,133
Subtotal Support and Management	0	508	450	780	780	3,120	5,638
Subtotal Test and Evaluation	0	225	632	632	860	4,180	6,529
Total Project	40,029	75,994	76,317	90,026	88,770	403,164	774,300

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1776 AEGIS Weapon System Mods	2,653	4,705	4,713	4,915	5,222	4,749	4,647	4,791	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for modifications to the AEGIS Weapon System MK-7 to counter the threat as articulated in ONI System Threat Assessment Report, ONI TA #046-93 dated May 1993. The modifications will be backfitted into CG 47 Class and DDG 51 Class ships already in the fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($2,150) Completed Operational Readiness Test System (ORTS), Man-Machine Interface (MMI) upgrade equipment fabrication and computer program code, test, and debug.
- (U) ($253) Conducted system testing in preparation for demonstration of ORTS MMI upgrade at the CSED Site in FY 1995.
- (U) ($250) Provided AN/SPY-1 radar system analysis support for Cruiser and Destroyer baseline upgrades and AN/SPY-1B/D radar system upgrades.

2. (U) FY 1995 PLAN:

- (U) ($334) Conduct ORTS MMI upgrade CSED Site demonstration.
- (U) ($3,887) Develop ORTS MMI upgrade Ordnance Alteration proof-in kit for land-based integration and test.

- (U) ($234) Continue to develop computer program algorithms to improve Anti-Air Warfare system performance against various Deceptive Electronic Counter-Countermeasures (DECCM) threats.

- (U) ($250) Continue AN/SPY-1 radar system analysis support for Cruiser and Destroyer baseline upgrades and AN/SPY-1B/D radar system upgrades.

3. (U) FY 1996 PLAN:

- (U) ($300) Complete ORTS MMI upgrade implementation planning.

- (U) ($300) Continue AN/SPY-1 radar system analysis support for Cruiser and Destroyer baseline upgrades and AN/SPY-1B/D radar system upgrades.

- (U) ($4,113) Start AN/SPY-1B/B(V)/D DECCM Phase I full-scale design, development engineering, and testing.

4. (U) FY 1997 PLAN:

- (U) ($300) Continue AN/SPY-1B/D upgrade analysis support.

- (U) ($2,655) Continue AN/SPY-1B/B(V)/D DECCM Phase I design, development engineering, and testing.

- (U) ($1,960) Start design and engineering to integrate ORTS upgrades into Baselines 4, 5 and 6.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: AEGIS Weapon System Mods

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,653	4,802	XXX	XXX
(U) FY 1995 Appropriated:	XXX	4,802	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-97	XXX	XXX
(U) FY 1996/97 OSD Budget Submit:	2,653	4,705	4,713	4,915

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding was decreased by $97 in FY 1995 to accommodate cuts in university research, travel, and to support Small Business Innovative Research (SBIR).

(U) Schedule: Not applicable.

(U) Technical: AN/SPY-1 radar system analysis support for Cruiser and Destroyer baseline upgrades and radar system upgrades and AN/SPY-1B/D upgrades started in FY 1994.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI5246										
	29,304	36,353	64,288	34,894	26,878	53,926	39,788	41,323	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: AEGIS Weapon System Mods

D. SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	N/A	N/A	N/A	N/A	CONT.
Engineering Milestones	N/A	N/A	N/A	N/A	CONT.
T&E Milestones	N/A	N/A	N/A	N/A	CONT.
Contract Milestones	N/A	N/A	N/A	N/A	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: AEGIS Weapon System Mods

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	2,002	4,152	4,210	4,412
b. Government Engineering Support	400	550	500	500
c. Program Management Support	251	3	3	3
Total	2,653	4,705	4,713	4,915

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: AEGIS Weapon System Mods

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Martin Marietta, Moorestown, NJ	SS/CPFF	03/91	34,339	34,339	3,480	1,739	3,822	4,116	4,279	16,903	34,339
Miscellaneous			5,264	5,264	0	663	880	594	633	2,494	5,264
Support and Management											
Miscellaneous			977	977	705	251	3	3	3	12	977

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering
PROJECT NUMBER: K1776
PROJECT TITLE: AEGIS Weapon System Mods

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	3,480	2,402	4,702	4,710	4,912	19,397	39,603
Subtotal Support and Management	705	251	3	3	3	12	977
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	4,185	2,653	4,705	4,713	4,915	19,409	40,580

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1937 DDG Weapons Development	23,985	9,885	10,944	4,675	0	0	0	0	N/A	182,160

A. (U) BRIEF DESCRIPTION AND BUDGET ITEM DESCRIPTION: This program is required to develop selected systems and subsystems for the ARLEIGH BURKE (DDG 51) class ships. This project funds development of equipment for the AEGIS Combat System, as opposed to the costs of integrating elements into the Combat System which is funded in Project K1447. Current funding completes the development of an upgrade to the current AN/SPY-1D radar, Engineering Development Model 4B (EDM-4B), to enhance its capability against seaskimming targets in increasingly more severe electronic countermeasures and in near-land clutter environments. The changes are in the transmitter, signal processor, and radar control computer program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($6,700) Completed computer program code generation; completed debugging and testing.
- (U) ($8,700) Completed EDM-4B fabrication and completed element integration and testing.
- (U) ($8,585) Installed and performed system level integration at the CSED Site.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT NUMBER: K1937 PROJECT TITLE: DDG Weapons Development

2. (U) FY 1995 PLAN:

- (U) ($1,361) Complete system integration and test.
- (U) ($2,524) Conduct Electronic Countermeasures test validation at the CSED Site.
- (U) ($6,000) Start adjunct processor development and testing, including testing of microprocessors against AEGIS benchmark requirements, testing commercial operating systems, and computer architecture development.

3. (U) FY 1996 PLAN:

- (U) ($5,000) Conduct Developmental Tests/Operational Tests (DT/OT-1 and DT/OT-2) at the CSED Site.
- (U) ($5,944) Continue adjunct processor development and testing, including testing of microprocessors against AEGIS benchmark requirements, testing commercial operating systems, and computer architecture development.

4. (U) FY 1997 PLAN:

- (U) ($4,675) Complete adjunct processor development, testing, and selection.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: DDG Weapons Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	23,985	10,361	XXX	XXX
(U) FY 1995 Appropriated:	XXX	10,361	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-476	XXX	XXX
(U) FY 1996/97 OSD Budget Submit:	23,985	9,885	10,944	4,675

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding decreased in FY 1995 for adjustments in consulting services, travel, university research, and SBIR.

(U) Schedule: DT/OT at the CSED Site moved from FY 1995 to FY 1996 to incorporate some adjunct processor applications.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: DDG Weapons Development

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122	2,637,872	2,642,008	2,169,257	2,857,085	2,379,218	3,180,783	3,215,594	3,338,727	CONT.	CONT.
(U) OPN LI5246	29,304	36,353	64,288	34,894	26,878	53,926	39,788	41,323	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					COMPLETED.
Engineering Milestones					COMPLETED.
T&E Milestones			2Q EDM DT/OT-1 4Q EDM DT/OT-2		COMPLETED.
Contract Milestones					COMPLETED.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering
PROJECT NUMBER: K1937
PROJECT TITLE: DDG Weapons Development

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	23,985	9,885	10,944	4,675
Total	23,985	9,885	10,944	4,675

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: DDG Weapons Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Martin Marietta, Moorestown, NJ	SS/CPFF	03/91	182,160	182,160	132,671	23,985	9,885	10,944	4,675	0	182,160

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: DDG Weapons Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	132,671	23,985	9,885	10,944	4,675	0	182,160
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	132,671	23,985	9,885	10,944	4,675	0	182,160

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0439 Standard Missile Improvements	53,254	16,014	8,572	1,980	1,455	1,499	1,509	1,555	CONT.	CONT.
U1632 AEGIS ER (SM-2 Block IV)	9,018	782	0	0	0	0	0	0	0	382,907
TOTAL	62,272	16,796	8,572	1,980	1,455	1,499	1,509	1,555	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) STANDARD MISSILE IMPROVEMENT (Project S0439): STANDARD Missile fuze and guidance performance degrades when the target is in close proximity to the sea surface. The low altitude improvement program will improve performance against low and very low altitude targets. It will be implemented in two phases: Phase I added a fuze altimeter and trajectory shaping enabling improved target detection and reducing the effect of multipath on radar returns on guidance performance. Phase II will add a moving target indicator (MTI), azimuth sensing fuze, and . The will improve lethality throughout the SM-2 Block III/IIIA/IIIB engagement envelope and will also improve lethality throughout the SM-2 Block IV. The SM-2 Block IIIB (MHIP) will add a dual mode (RF/IR) capability to engage existing threats in a severe RF countermeasures environment. This capability is currently being developed for AEGIS ships and will be expanded to TARTAR ships with development commencing in FY 1994. Additionally, a limited P3I effort will be started to improve performance against IR counter countermeasures. In addition, in FY 95 a development project to modify excess terrier missiles to meet Navy requirement for Supersonic Sea-Skimming Targets (SSST) and Tactical Ballistic Missile Targets will commence.

(U) AEGIS ER (SM-2 Block IV) (Project 1632): This project was moved from PE 0603318N. The AEGIS ER missile is the latest member of the STANDARD Missile family of area defense missiles, specifically designed to take maximum advantage of AEGIS and the vertical launching system (VLS). This missile, also known as the SM-2 Block IV, builds upon the SM-2 Block IIIA baseline with its improved low altitude performance and Adding significant propulsion, guidance and control enhancements, AEGIS ER extends the STANDARD Missile engagement capability to very high altitudes, increases maneuverability and cross range capability and improves guidance homing accuracy in stringent environments.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: SM-2 Improvements

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0439 Standard Missile Improvements	53,254	16,014	8,572	1,980	1,455	1,499	1,509	1,555	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: STANDARD MISSILE IMPROVEMENT (Project S0439): STANDARD Missile fuze and guidance performance degrades when the target is in close proximity to the sea surface. The low altitude improvement program will improve performance against low and very low altitude targets. It will be implemented in two phases: Phase I added a fuze altimeter and trajectory shaping enabling improved target detection to and reducing the effect of multipath on radar returns on guidance performance. Phase II will add a moving target indicator (MTI), azimuth sensing fuze, and . The will improve lethality throughout the SM-2 Block III/IIIA/IIIB engagement envelope and will also improve lethality throughout the SM-2 Block IV. SM-2 will receive Phase I (Block III) and be upgraded by Phase II (Block IIIA), the importance of these improvements derive from the fact they address threats know to exist today. Additionally, the Missile Homing Improvement Program (MHIP) SM-2 Block IIIB will expand this effort by incorporating a dual mode (RF/IR) seeker to improve the missile's capability to resolve seeker ambiguities and engage targets in a severe RF countermeasures environment. These improvements are being developed in such a way that current systems in the fleet can be backfitted with this capability. Specific threats for SM-2 Block III/IIIA/IIIB are identified in Navy Decision Coordinating Paper (NDCP) and approved MNS and ORD Block IIIB. Future improvements may include additional very low altitude performance enhancements, two missiles per VLS canister (Dual Pack), insensitive munitions enhancements, and a common MR/ER missile, and improved IR counter countermeasures. In addition, in FY 95 a development project to modify excess terrier Missiles to meet Navy requirement for Supersonic Sea-Skimming Targets (SSST) and Tactical Ballistic Missile Targets will commence.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: SM-2 Improvements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,500) Flight Tests commenced at White Sands Missile Range (WSMR), 5/94 (Block IIIB)
- (U) ($6,022) Continued further enhancements of very low altitude performance enhancements versus low RCS targets 9/94 (Block IIIA)
- (U) ($4,000) Initiated MHIP Pre-planned Improvements (P3I) Program.
- (U) ($39,732) Continued MHIP EMD Program, including preparations for DT/OT.

2. (U) FY 1995 PLAN:

- (U) ($2,500) Conduct At-Sea, OPEVAL 3/95.
- (U) ($3,514) System for improved Low Altitude Performance: Finalize design of systems, Conduct Preliminary and Critical Design Review, Fabricate hardware for flight tests. Concept definitions/tradeoff studies for littoral engagement capability.
- (U) ($2,000) Continue P3I efforts.
- (U) ($2,000) Complete EDM Missile fabrication.
- (U) ($6,000) Begin SSST Project

3. (U) FY 1996 PLAN:

- (U) ($5,302) Complete development and test Low Altitude Systems (LAS) prototype.
- (U) ($3,270) Preliminary design on littoral engagement capability.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT NUMBER: U0439 PROJECT TITLE: SM-2 Improvements

4. (U) FY 1997 PLAN:

- (U) ($985) Transition LAS to production.
- (U) ($995) Prototype development of littoral engagement capability.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	53,514	10,751	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	16,751	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	-260	-737	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	53,254	16,014	8,572	1,980

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The decrease of $260K in FY 1994 results in an End-Of-Year execution update. The FY 1995 decrease of $737K resulted from a Small Business Innovative Research cut of $244K and Undistributed Congressional reductions for Consulting Support Services, University Research and Travel totalling $493K.

(U) Schedule: N/A

(U) Technical: N/A

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN 223400	0	174,900	152,700	144,100	137,200	140,100	146,000	159,200	0	1,054,200

NOTE: These are only the SM-2 BLK IIIB related WPN funds.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: SM-2 Improvements

(U) RELATED RDT&E:

(U) PE 0604366N, Project Number: U1632 (SM-2 Block IV Missile)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	1Q Block IIIA IOC 4Q Block IIIB MS IIA	4Q Block IIIB MS III			
Engineering Milestones					
T&E Milestones	3Q BLK IIIB WSMR	3Q BLK IIIB TECHEVAL 4Q OPEVAL			
Contract Milestones		2Q BLK IIIB LRIP 4Q FRP			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: SM Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands) (Note 1)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Development/ Hardware Fabrication (Note 2)	27,864	7,628	4,001	895
b. Software Development	700	751	418	100
c. Test and Evaluation	12,561	2,250	929	200
d. Engineering Support	10,108	4,350	2,388	685
e. Support Equipment Development	500	200	836	100
f. Project Management Support	570	635	0	0
g. Travel	100	100	0	0
h. Other/Misc	851	100	0	0
Total	53,254	16,014	8,572	1,980

Note 1: MHIP project is also funded by PE 0603609, Project U1821.

Note 2. Systems development, test, and hardware are not separately priced in development contract.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: SM Improvements

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Allied-Signal Townsend, MD	CPAF	4/91	16,700	16,700	15,000	1,700	0	0	0	0	16,700
Motorola Scottsdale, AZ	CPAF	12/94	21,700	21,700	20,000	1,700	0	0	0	0	21,700
Unknown	CPAF	Various	11,150	11,150	0	0	2,700	5,002	1,245	Con't	Con't
IRISS(Note 1) Bedford, MA/Tucson, AZ	CPAF	12/89	182,700	185,600	75,035	26,982	350	0	0	0	102,367
Naval Air Warfare Center Weapons Division/ China Lake, CA	WR	Various	11,307	11,307	6,841	2,966	1,500	0	0	0	11,307
Various	Various	Various	14,536	14,536	7,366	1,907	5,263	0	0	0	14,536
Applied Physics Laboratory Laurel, MD	PD	Various	13,503	13,503	9,120	3,200	1,183	0	0	0	13,503

(1) This contract is funded by PE 0603609N and PE 0604366N.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: SM Improvements

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
Various	Various	Various	Con't	Con't	6,498	888	1,139	300	135	Con't	Con't
Naval Air Warfare Center Weapons Division/ China Lake	WR	Various	Con't	Con't	20,822	1,418	628	1,770	350	Con't	Con't
Applied Physics Laboratory Laurel, MD	PD	Various	Con't	Con't	10,000	450	500	1,000	250	Con't	Con't
Test and Evaluation											
Naval Air Warfare Center Weapons Division/ China Lake	WR	Various	Con't	Con't	13,416	6,586	700	300	0	Con't	Con't
COMOPTEVFOR Norfolk, VA	PD	Various	4,535	4,535	210	3,675	650	0	0	0	4,535
Various	Various	Various	Con't	Con't	5,618	1,782	1,401	200	0	Con't	Con't

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements
PROJECT NUMBER: U0439
PROJECT TITLE: SM Improvements

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	133,362	38,455	10,996	5,002	1,245	CONT.	CONT.
Subtotal Support and Management	37,320	2,756	2,267	3,070	735	CONT.	CONT.
Subtotal Test and Evaluation	19,244	12,043	2,751	500	0	CONT.	CONT.
Total Project	189,926	53,254	16,014	8,572	1,980	CONT.	CONT.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0528 ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT	5,448	1,357	3,415	1,490	0	0	0	0	0	42,651
Q0529 AIRBORNE MINE HUNT SYSTEMS	16,524	218	12,791	20,123	9,099	4,692	2,490	0	0	115,323
Q2047 AIRBORNE LASER MINE DETECTION SYSTEM (ALMDS)	9,197	18,177	26,020	28,256	10,433	203	0	0	0	138,006
TOTAL	31,169	19,752	42,226	49,869	19,532	4,895	2,490	0	0	295,980

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops airborne mine countermeasures systems that are required to counter known and projected mine threats. Provides a

rapidly deployable means; and a non-acoustic mine detection and classification capability against floating and tethered mines] using Light Detection and Ranging (LIDAR) techniques.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0528 ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT	5,448	1,357	3,415	1,490	0	0	0	0	0	42,651

A. (C) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: There is a requirement to expand helicopter mine countermeasures by developing a more effective capability to sweep [deep moored] mines. The A/N37U-1 Controlled Depth Moored Sweep is being developed to increase the sweeping depth. The magnetic cable improvement is being developed to provide higher current capacity, smaller diameter, and lower weight.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,000) A/N37U-1 (37U) - Conducted TECHEVAL.
- (U) ($3,253) 37U - Conducted OPEVAL.
- (U) ($1,011) Magnetic Cable Improvement (MCI) - Prepare draft specification and solicitation package.

2. (U) FY 1995 PLAN:

- (U) ($184) MCI - Complete draft specification and solicitation package. (This effort is a FY95 effort funded with FY94 funds available from terminated Cluster Pretzel program.)
- (U) ($1,165) MCI - Award EMD contract and initiate design of EMD models.
- (U) ($96) MCI - Conduct Preliminary Design Review.

- (U) ($96) MCI - Conduct Critical Design Review.

3. (U) FY 1996 PLAN:

- (U) ($2,314) MCI - Modification to specification; modification contract award.
- (U) ($1,101) MCI - Test EMD models.

4. (U) FY 1997 PLAN:

- (U) ($1,000) MCI - Complete TECHEVAL.
- (U) ($490) MCI - Obtain Milestone III.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,448	1,396	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,396	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-39	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	5,448	1,357	3,415	1,490

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1995 funding reduction doesn't have a significant impact. (-2) Univ Research; (-13) CSS Reduction; (-1) Travel; (-23) SBIR.

(U) Schedule: Magnetic Cable Improvement EMD contract award moved from JAN 95 to APR 95.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q0528 PROJECT TITLE: ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN 424800	5,994	0	3,966	4,769	2,090	711	7,500	5,700	0	30,730

(U) RELATED RDT&E:

(U) PE 0602315N (MCM, Mining and Special Warfare Technology)
(U) PE 0603502N (Surface and Shallow Water MCM)
(U) PE 0603555N (Sea Control and Littoral Warfare Technology Demonstration)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q 37U LRIP	1Q 37U MS III 1Q Mag Cable MS II		4Q Mag Cable MS III	
Engineering Milestones		3Q Mag Cable PDR	1Q Mag Cable CDR		
T&E Milestones	3Q 37U DT-IIC 4Q 37U OT-IIB			1Q Mag Cable DT-IIB	
Contract Milestones		3Q Mag Cable EMD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q0528 PROJECT TITLE: ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	1,150	1,161	1,000	0
b. Systems Engineering	400	30	605	294
c. Reliability, Maintainability, and Availability	23	7	6	0
d. Technical Data	300	30	200	300
e. Developmental Test & Evaluation	1,500	60	1,544	836
f. Program Management Support	50	44	35	35
g. Travel	25	25	25	25
h. Operational Test & Evaluation	2,000	0	0	0
Total	5,448	1,357	3,415	1,490

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q0528 PROJECT TITLE: ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
GSS (37U)	FFP	06/92	20,993	20,993	20,733	260	0	0	0	0	20,993
TBD (MAG CABLE)	C/CPFF	1/95	2,200	2,200	0	0	1,200	1,000	0	0	2,200
CSS, Panama City	WR	VARIOUS	13,196	13,196	9,086	2,503	132	846	629	0	13,196
Miscellaneous	VARIOUS	VARIOUS	1,212	1,212	897	315	0	0	0	0	1,212
Support and Management											
Miscellaneous	VARIOUS	VARIOUS	325	325	225	25	25	25	25	0	325
Test and Evaluation											
CSS, Panama City	WR	06/94	3,425	3,425	0	1,045	0	1,544	836	0	3,425
OPTEVFOR	WR	06/94	1,300	1,300	0	1,300	0	0	0	0	1,300

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0	0
Support and Management				0	0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0	0

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0528
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	30,716	3,078	1,332	1,846	629	0	37,601
Subtotal Support and Management	225	25	25	25	25	0	325
Subtotal Test and Evaluation	0	2,345	0	1,544	836	0	4,725
Total Project	30,941	5,448	1,357	3,415	1,490	0	42,651

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0529 AIRBORNE MINE HUNT SYSTEMS	16,524	218	12,791	20,123	9,099	4,692	2,490	0	0	115,323

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes a sonar for mine detection and classification, and a system for mine neutralization by explosive charge, with equipment designed to

The

This project also includes the re-start of the Airborne Mine Neutralization System (AMNS), in FY 96. The AMNS will provide neutralization of bottom and moored mines using an airborne delivered, expendable mine neutralization device.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($7,599) AN/AQS-20 (Q-20) - Continued hardware and software Critical Design.
- (U) ($3,000) Q-20 - Initiated ordering of EMD components.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

2. (U) FY 1995 PLAN:

- (U) ($3,000) Q-20 - Complete hardware and software Critical Design. (This is a FY 95 effort performed with FY 94 funds.)
- (U) ($3,143) Q-20 - Continue hardware integration, software integration and hardware/software integration. (This is a FY 95 effort performed with FY 94 funds ($2,925-FY94; $218-FY95).

3. (U) FY 1996 PLAN:

- (U) ($2,435) Q-20 - Complete fabrication of EMD models.
- (U) ($7,303) Q-20 - Start system qualification and environment tests.
- (U) ($3,053) Airborne Mine Neutralization System (AMNSYS) - Prepare and complete procurement package (specification, statement of work, source selection plan) evaluate proposals, and award contract.

4. (U) FY 1997 PLAN:

- (U) ($3,522) Q-20 - Conduct TECHEVAL.
- (U) ($1,290) Q-20 - Conduct contractor demo.
- (U) ($4,880) Q-20 - Conduct OPEVAL.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

- (U) ($4,000) AMNSYS - Establish design requirements in response to performance requirements.
- (U) ($6,431) AMNSYS - Conduct Systems Design Review and Preliminary Design Review

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	16,524	285	XXX	XXX
(U) FY 1995 Appropriated	XXX	285	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-67	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	16,524	218	12,791	20,123

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95 funding reductions (-63) CSS Reduction, (-4) SBIR.

(U) Schedule: Q-20 CDR completed 1Q FY95; Q-20 MS III slipped from 4Q FY97 to 1Q FY98 due to additional design efforts to complete critical design to maintain towed body weight for single pass option. AMNSYS award slipped from 3Q FY96 to 1Q FY97 (Dec 96) due to delay in preparing specs.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN 424800	0	0	0	0	16,837	22,411	24,300	42,600	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

(U) RELATED RDT&E:

(U) PE 0602315N (MCM, Mining and Special Warfare Technology)
(U) PE 0603502N (Surface and Shallow Water MCM)
(U) PE 0603555N (Sea Control and Littoral Warfare Technology Demonstration)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					1Q/98 Q-20 MS III
Engineering Milestones	1Q Q-20 PDR	1Q Q-20 CDR			
T&E Milestones				3Q Q-20 DT-IIB 4Q Q-20 OT-IIB	
Contract Milestones				1Q AMNSYS AWARD	

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	8,550	198	6,773	6,981
b. Software Development	2,850	0	1,240	0
c. Systems Engineering	4,175	0	0	0
d. Developmental Test & Evaluation	0	0	3,522	5,000
e. Operational Test & Evaluation	0	0	0	6,794
f. Travel	40	20	20	20
g. Miscellaneous	909	0	1,236	1,328
Total	16,524	218	12,791	20,123

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Raytheon	C/CPFF	7/92	35,163	35,163	17,822	11,634	198	4,959	550	0	35,163
TBD (AMNSYS)	C/CPFF	11/96	15,500	15,500	0	0	0	0	8,500	7,000	15,500
CSS, Panama City	WR	VARIOUS	40,301	40,301	27,278	3,940	0	1,929	1,931	5,223	40,301
Miscellaneous	WR	VARIOUS	8,746	8,746	4,127	930	0	2,361	1,328	0	8,746
Support and Management											
Miscellaneous	WR	VARIOUS	299	299	159	20	20	20	20	60	299
Test and Evaluation											
OPTEVFOR	WR	10/96	6,880	6,880	0	0	0	0	4,880	2,000	6,880
CSS, Panama City	WR	10/95	8,434	8,434	0	0	0	3,522	2,914	1,998	8,434

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0	0
Support and Management				0	0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0	0

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	49,227	16,504	198	9,249	12,309	12,223	99,710
Subtotal Support and Management	159	20	20	20	20	60	299
Subtotal Test and Evaluation	0	0	0	3,522	7,794	3,998	15,314
Total Project	49,386	16,524	218	12,791	20,123	16,281	115,323

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q2047 AIRBORNE LASER MINE DETECTION SYSTEM (ALMDS)	9,197	18,177	26,020	28,256	10,433	203	0	0	0	138,006

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Airborne Laser Mine Detection System (ALMDS) is a light detection and ranging (LIDAR) system for rapid detection and localization of floating and near surface tethered mines.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,676) Completed ADM software integration.
- (U) ($1,500) Completed Contractor Testing (CT-I).
- (U) ($1,500) Completed CT-II.
- (U) ($2,000) Complete DT-I/OA.
- (U) ($521) Continue ALMDS MS-II Documentation.

2. (U) FY 1995 PLAN:

- (U) ($2,000) Develop Electro Optical Model to support system engineering trade offs.
- (U) ($1,000) Continue Technology analysis.
- (U) ($1,400) Correct DT-I/Operational assessment critical deficiecies.

- (U) ($2,000) Retest DT-I/OA fixes.
- (U) ($2,000) Conduct requirements analysis for SH-60 and state specifications in terms of performance.
- (U) ($1,000) Obtain Milestone II approval and Release RFP.
- (U) ($8,777) Award EDM contract.

3. (U) FY 1996 PLAN:

- (U) ($2,000) Complete Critical Design Review.
- (U) ($12,262) Initiate EMD parts procurement.
- (U) ($11,758) Initiate EMD fabrication.

4. (U) FY 1997 PLAN:

- (U) ($12,256) Conduct subsystem hardware and software module integration and test.
- (U) ($12,000) Complete EMD fabrication and total system test and acceptance.
- (U) ($500) Initiate Test Plan for DT-II.
- (U) ($500) Initiate Test Plan for OT-II.
- (U) ($3,000) Conduct contractor demonstration tests.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q2047 PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	10,397	18,740	XXX	XXX
(U) FY 1995 Appropriated:	XXX	18,740	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-1,200	-563	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	9,197	18,177	26,020	28,256

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The funding adjustment (-1,200) End of year execution update; the funding was adjusted accordingly. FY 95 - (-30) Univ Research; (-239) CSS Reduction; (-26) Travel; (-268) SBIR.

(U) Schedule: Milestone II slipped from Dec 94 to May 95.

(U) Technical: Additional effort was required to complete software integration which had an impact on schedule.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN 424800	0	0	0	0	0	22,202	20,744	20,000	0	62,946

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q2047 PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

(U) RELATED RDT&E:

(U) PE 0603782N (Shallow Water MCM Demo)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		3Q MS II			4Q/98 MS-III
Engineering Milestones			2Q CDR		
T&E Milestones	4Q DT-IA			3Q DT-IIB	2Q/98 OT-IIA
Contract Milestones		2Q EMD AWARD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	1,915	6,186	12,128	15,076
b. Software Development	1,227	5,346	6,564	2,636
c. Development Support	1,700	3,750	4,028	4,038
d. Developmental Testing & Evaluation	2,000	600	600	4,211
e. Operational Testing & Evaluation	2,000	0	0	0
f. Integrated Logistics Support	300	500	500	500
g. Systems Engineering	0	740	1,145	740
h. Program Management Support	40	1,040	1,040	1,040
i. Travel	15	15	15	15
Total	9,197	18,177	26,020	28,256

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q2047 PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
KAMAN	SS/CPFF	11/91	35,597	35,597	31,720	3,877	0	0	0	0	35,597
TBD	C/CPFF	01/95	54,385	54,385	0	0	11,750	19,471	19,213	3,951	54,385
CSS, Panama City	WR	VARIOUS	7,991	7,991	2,801	965	1,075	1,150	1,150	850	7,991
NRL	WR	VARIOUS	6,300	6,300	0	600	1,500	1,500	1,500	1,200	6,300
Miscellaneous	VARIOUS	VARIOUS	9,970	9,970	0	715	2,212	2,259	2,853	1,931	9,970
Support and Management											
Miscellaneous	VARIOUS	VARIOUS	8,900	8,900	5,536	40	1,040	1,040	1,040	204	8,900
Test and Evaluation											
CSS, Panama City	WR	VARIOUS	14,863	14,863	5,663	3,000	600	600	2,500	2,500	14,863

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

GOVERNMENT FURNISHED EQUIPMENT

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development					0	0	0	0	0	0	0
Support Management					0	0	0	0	0	0	0
Test and Evaluation					0	0	0	0	0	0	0

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	34,521	6,157	16,537	24,380	24,716	7,932	114,243
Subtotal Support and Management	5,536	40	1,040	1,040	1,040	204	8,900
Subtotal Test and Evaluation	5,663	3,000	600	600	2,500	2,500	14,863
Total Project	45,720	9,197	18,177	26,020	28,256	10,636	138,006

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0775 Submarine Support Equipment Program	8,029	7,085	17,084	17,268	16,799	9,486	3,681	0	0	108,421
S0219 Submarine Sonar Improvement	31,890	27,306	30,162	41,957	35,525	39,636	34,060	34,505	CONT.	CONT.
X0742 Submarine Integrated Antenna Systems	13,173	4,406	17,796	15,685	14,110	14,175	13,269	12,686	CONT.	CONT.
X1411 Submarine Tactical Communications System	3,238	1,710	5,273	4,627	4,999	5,954	6,370	6,517	CONT.	CONT.
TOTAL	56,330	40,507	70,315	79,537	71,433	69,251	57,380	53,708	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support Measures (ESM) techniques and components, equipment, and systems that will increase submarine 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 ESM 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 major efforts in this area are the Engineering and Manufacturing Development of the Integrated ESM Mast (IEM) and the Periscope Monopulse Direction Finding (DF) System for the Type 18 Periscope.

(U) The Submarine Sonar Improvement Program delivers block updates to Sonar Systems installed on SSN 688, 688I and TRIDENT Class Submarines. The goal is to maintain clear acoustic, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization and contact following. Current developments are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) The Submarine Integrated Antenna Systems (SIAS) project develops the antennas needed to communicate in networks such as Ultra High Frequency Satellite Communications, Extremely Low Frequency (ELF), Extremely High Frequency (EHP) and Global Positioning System. Hardware developments include: (a) mast-mounted systems; (b) buoyant cable systems; and (c) expendable buoy systems.

(U) The Submarine Tactical Communications Systems project provides attack submarines with an exterior communications system which: (a) minimizes the time required at communications depth; (b) enhances operability, reducing errors and manpower requirements; and (c) provides flexibility for low impact growth and change throughout the life of the submarine. Design efforts will provide increased antenna signal distribution and interconnection subsystems to accommodate ELF, EHF, and Mini-Demand Assigned Multiple Access and a message storage and processing subsystem.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to the production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0775 Submarine Support Equipment Program	8,029	7,085	17,084	17,268	16,799	9,486	3,681	0	0	108,421

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops and improves techniques and components, equipment, and systems that will increase submarine 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 ESM 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. Specific efforts include development of the: (1) IEM that replaces the AN/BRD-7 and AN/BLD-1 DF Systems on SSN 688 Class Submarines, SSN 21 Class Submarines and is required for the New Attack Submarine; and (2) the Periscope Monopulse DF System for the Type 18 Periscope. The Advanced Submarine Tactical ESM Combat System (ASTECS), previously funded here, is now supported under PE 0604558N, project

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,177) Completed IEM System Design Review and Software Specification Review.
- (U) ($3,372) Completed IEM requirements analysis and system trade-off studies.
- (U) ($1,480) Initiated IEM/High Probability of Intercept (HPI) interface design.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: F0775
PROJECT TITLE: Submarine Support Equipment Program

2. (U) FY 1995 PLAN:

- (U) ($3,623) Complete the IEM Preliminary Design Review.
- (U) ($800) Complete shock tests on a mechanical model of the IEM Above Deck Sensor Unit.
- (U) ($2,500) Procure non-developmental and long lead items for the IEM radar subsystem.
- (U) ($162) Completed HPI Interface System Requirements/System Design Review.

3. (U) FY 1996 PLAN:

- (U) ($6,652) Complete Critical Design Review of the IEM System and HPI modification kit. Begin fabrication of IEM Engineering Design Models and HPI modification kits.
- (U) ($9,632) Manufacture and test printed circuit boards and enclosures. Assemble drawers for IEM EDMs 1 and 2, and HPI modification kits.
- (U) ($800) Initiate system level assembly and drawer level testing of IEM.

4. (U) FY 1997 PLAN:

- (U) ($3,500) Design and manufacture shock test fixtures. Complete shock and environmental tests on IEM.
- (U) ($4,000) Complete fabrication of IEM EDMs and conduct system performance tests.
- (U) ($1,800) Perform IEM software integration tests.
- (U) ($2,500) Complete system integration of IEM EDM 2 and conduct operator training for DT-IIA/OT-IIA.
- (U) ($2,852) Integrate IEM with HPI and host ESM system. Complete technical documentation, perform reliability/maintainability tests and correct design deficiencies.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: F0775 PROJECT TITLE: Submarine Support Equipment Program

- (U) ($2,616) Begin engineering development of the Periscope Monopulse DF System for the Type 18 Periscope by awarding an engineering development contract.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY1997
(U) FY 1995 President's Budget:	5,144	7,552	XXX	XXX
(U) FY 1995 Appropriated:	XXX	7,552	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	+2,885	-467	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	8,029	7,085	17,084	17,268

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 increase of $2,885K is due to a reprogramming from P.E. 0604777N/Project F0253 approved by ASN (RD&A) in March 1994. The 1995 decrease of $467K is due to undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LINE 256000	0	0	0	0	0	0	13,728	32,033	0	45,761

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: F0775 PROJECT TITLE: Submarine Support Equipment Program

(U) RELATED RDT&E:

(U) PE 0603562N (Submarine Tactical Warfare System)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					3Q/99 IEM-MS III IOC
Engineering Milestones	4Q IEM-SDR	2Q IEM-PDR	1Q IEM-CDR		
T&E Milestones					2Q/98-IEM DT/OTIIA 2Q/99-IEM DT/OTIIB
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: F0775
PROJECT TITLE: Submarine Support Equipment Program

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Prime Hardware	4,580	2,855	8,225	9,471
b. Software Development	642	1,453	3,796	2,825
c. Engineering Support	1,555	1,600	2,450	2,700
d. Miscellaneous	1,252	1,177	2,613	2,272
Total	8,029	7,085	17,084	17,268

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: F0775 PROJECT TITLE: Submarine Support Equipment Program

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
IEM EMD contract											
Raytheon Goleta, CA.	C/CPIF/CPAF	4/93	63,031	63,031	16,196	4,342	4,728	12,020	11,000	14,745	63,031
IEM/HPI Interface contract											
ST Research Newington, VA.	SS/CPIF	8/94	4,825	4,825	0	1,480	162	2,101	300	782	4,825
Periscope Monopulse DF EDM contract											
TBD	C/CPIF	10/96	10,457	10,457	0	0	0	0	2,366	8,101	10,467
Miscellaneous					4,897	734	1,145	713	752	1,988	10,229
Support and Management											
Miscellaneous					4,094	1,150	900	1,400	1,450	2,700	11,694
Test and Evaluation											
Miscellaneous					3,802	323	150	850	1,400	1,650	8,175

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: F0775 PROJECT TITLE: Submarine Support Equipment Program

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	21,093	6,556	6,035	14,834	14,418	25,616	88,552
Subtotal Support and Management	4,094	1,150	900	1,400	1,450	2,700	11,694
Subtotal Test and Evaluation	3,802	323	150	850	1,400	1,650	8,175
Total Project	28,989	8,029	7,085	17,084	17,268	29,966	108,421

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0219 Submarine Sonar Improvement (Eng)	31,890	27,306	30,162	41,957	35,525	39,636	34,060	34,505	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program delivers block updates to Sonar Systems installed on SSN 688, 688I and TRIDENT Class Submarines. The goal is to maintain clear acoustical, tactical and operational superiority over submarine and surface combatants in all scenarios through detection, classification, localization and contact following. Current developments, detailed below, are focused on supporting Littoral Warfare, Regional Sea Denial, Battle Group Support, Diesel Submarine Detection, Surveillance, and Peacetime Engagement. TECHEVAL and OPEVAL are completing for AN/BQQ-5E and the TB-29 Array; these will provide quantum improvements in long-range detection and localization for SSN 688 and TRIDENT Class Submarines. Engineering Change Proposal (ECP) 7001 to AN/BQQ-5E will provide Low Frequency Active Interference Rejection, Dual Towed Array Processing and Full Spectrum Processing to SSN 688 and TRIDENT Class Submarines. The Onboard Trainer is being developed to provide pierside and at-sea operational and team training to improve operator efficiency. ECP 1000 to AN/BSY-1 will incorporate AN/BQQ-5E and TB-29 capabilities, including those of AN/BQQ-5E ECP 7001. An early break-out of software and the utilization of commercial-off-the-shelf hardware are being considered. Towed array development will focus on (a) tow cable improvements for shallow water towing; (b) reliability improvements for all module type couplings, connectors, strength members and hoses; and (c) hydrophone and telemetry cost reduction alternatives (fiber optics).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($746) Developmental Testing (DT) IIM for AN/BQQ-5E and TB-29 Array.
- (U) ($3,895) Awarded development contract and completed Critical Design Review (CDR) for Onboard Trainer.
- (U) ($2,210) Conducted AN/BSY-1 ECP 1000 Cost and Operational Effectiveness Analysis (COEA), prepared for MS II approval.
- (U) ($12,941) Continued development of AN/BQQ-5E ECP 7001.

- (U) ($8,898) Continued development of TB-29 Array.
- (U) ($3,200) Continued development for Probe Alert, Desk Top Calculator (DTC) Improvements and the Acoustic Measurement Facility Improvement Program (AMFIP).

2. (U) FY 1995 PLAN:

- (U) ($5,433) Continue development of AN/BQQ-5E ECP 7001.
- (U) ($4,359) Continue development of Onboard Trainer.
- (U) ($7,500) Obtained MS II approval for AN/BSY-1 ECP 1000 (Dec 1994); Award development contract.
- (U) ($2,814) Complete development of TB-29 Array. Obtain MS III approval for TB-29 and AN/BQQ-5E.
- (U) ($3,200) Continue development for Probe Alert and DTC Improvements. Complete development of the AMFIP.
- (U) ($4,000) Initiate design efforts for a High Frequency/Rapid Localization Towed Array, Handling System Hydraulic Components, and Advanced Shallow-water Tow Cables.

3. (U) FY 1996 PLAN:

- (U) ($3,621) Complete development of AN/BQQ-5E ECP 7001.
- (U) ($17,122) Continue development of AN/BSY-1 ECP 1000. Conduct CDR.
- (U) ($6,800) Continue towed array development efforts to include initial at-sea testing and demonstrations of towed array/handling system improvements. Initiate technical demonstration efforts for designs prior to resuming TB-29 production.
- (U) ($569) Complete development of Onboard Trainer.
- (U) ($900) Continue development for Probe Alert and DTC Improvements.
- (U) ($1,150) Initiate AN/BSY-1 HF Upgrade program and complete COEA.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

4. (U) FY 1997 PLAN:

- (U) ($25,428) Continue development of AN/BSY-1 ECP 1000.
- (U) ($8,400) Continue towed array development efforts. Conduct at-sea testing of improved towed array hardware. Continue technical demonstration efforts.
- (U) ($2,079) Transition 6.3 development efforts of Medium Frequency Active Improvements to 6.4.
- (U) ($900) Continue development for Probe Alert and DTC Improvements.
- (U) ($5,150) Obtain MS II approval and Award AN/BSY-1 HF Upgrade development contract.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	32,055	27,952	XXX	XXX
(U) FY 1995 Appropriated:	XXX	27,952	XXX	XXX
(U) Adjustments from Appropriated/ FY 95 PRESBUDG:	-165	-646	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	31,890	27,306	30,162	41,957

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 reduction, based on expenditure rates, reduced in-house engineering by 1.5 manyears. FY95 reduction, based on various undistributed Congressional adjustments, reduces in-house engineering by 5 manyears.

(U) Schedule: Schedule changes resulted from delays in completing DT II M testing for AN/BQQ-5E and TB-29 and delays in obtaining MS II approval for AN/BSY-1 ECP 1000.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 214700	57,927	31,415	39,642	31,843	79,718	92,235	109,301	110,460	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0604524N (Submarine Combat System)
(U) PE 0604558N (New Design SSN Development)
(U) PE 0604561N (SSN-21 Development)
(U) PE 0604562N (Submarine Tactical Warfare System (ENG))

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		4Q AN/BQQ-5E MS III 4Q TB-29 MS III 1Q AN/BSY-1 ECP 1000 MS II		3Q AN/BSY-1 HF MS II	
Engineering Milestones	3Q Onboard Trainer CDR		3Q AN/BSY-1 ECP 1000 CDR		4Q/98 AN/BSY-1 ECP 1000 System Design Certification Test (SDCT)
T&E Milestones		2Q AN/BQQ-5E OT IIC 2Q TB-29 OT IIC			4Q/99 AN/BSY-1 ECP 1000 DT/OT
Contract Milestones		2Q AN/BSY-1 ECP 1000 EMD AWARD		3Q AN/BSY-1 HF Upgrade EMD Award	

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	23,897	16,330	22,431	33,936
b. Systems Engineering	5,913	9,392	5,574	5,895
c. Program Management Support	599	600	628	642
d. Test & Evaluation	746	0	0	0
e. Travel	120	150	120	120
f. Miscellaneous	615	834	1,409	1,364
Total	31,890	27,306	30,162	41,957

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Loral Manassas, VA	SS/CPAF	8/93	24,573	24,573	6,558	12,777	2,297	2,941	0	0	24,573
Martin Marietta Glen Burnie, MD	C/CPIF	6/90	77,600	77,600	67,600	8,000	2,000	0	0	0	77,600
Loral Manassas, VA	SS/CPAF	1/95	69,106	69,106	0	0	6,000	13,921	20,127	29,058	69,106
Loral Manassas, VA	C/CPIF	10/93	7,848	7,848	0	3,120	4,159	569	0	0	7,848
Various	Various	12/94	39,071	39,071	0	0	2,500	5,000	6,000	25,571	39,071
Various	Various	12/96	16,826	16,826	0	0	0	0	7,806	9,020	16,826
NAVUNSEAWARCEN Newport, RI	WR	Various	59,427	59,427	26,700	3,613	6,446	5,574	5,895	11,199	59,427
NAVSURFWARCEN Carderock, MD	WR	12/94	11,850	11,850	7,250	2,300	2,300	0	0	0	11,850
Miscellaneous	WR	12/94	16,760	16,760	6,400	735	1,004	1,529	1,487	5,605	16,760

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Sub Sonar Imp (Eng)

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
Miscellaneous					2,396	599	600	628	642	2,568	7,433
Test and Evaluation											
Miscellaneous		12/93	1,746	1,746	1,000	746	0	0	0	3,890	5,636
GOVERNMENT FURNISHED PROPERTY: Not applicable.											
Subtotal Product Development					114,508	30,545	26,706	29,534	41,315	79,490	323,061
Subtotal Support and Management					2,396	599	600	628	642	2,568	7,433
Subtotal Test and Evaluation					1,000	746	0	0	0	3,890	5,636
Total Project					117,904	31,890	27,306	30,162	41,957	85,948	336,130

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0742 Submarine Integrated Antenna Systems	13,173	4,406	17,796	15,685	14,110	14,175	13,269	12,686	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Integrated Antenna System (SIAS) project provides submarines with antenna systems designed to: (a) permit greater operational flexibility through improved speed/depth performance; (b) improve reliability and availability; and (c) be compatible with existing and emerging communications systems. This project funds research and development for the communications Master Plan (Program Summary). It specifically funds the following developments: Improved AN/BRA-34, High Speed Buoyant Cable Antennas (HSBCAs), Extremely High Frequency (EHF) Non-Penetrating Masts (EHF NPMs), Antenna Distribution Systems (ADSs), High Data Rate Antennas (HDA), Super High Frequency (SHF), Conformal Array Antennas (CAAs).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($100) Finalized Preparation for Milestone (MS) III for HSBCA.
- (U) ($2,700) Continued engineering efforts and started Developmental Testing (DT) -II for the AN/BST-1 upgrade.
- (U) ($2,100) Continued engineering efforts for the Improved AN/BRA-34.
- (U) ($5,587) Continued preparation for MS II for EHF NPM antenna.
- (U) ($2,286) Began systems engineering analysis efforts for the HDA.
- (U) ($400) Began design efforts for the ADS.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Integrated Antenna System

2. (U) FY 1995 PLAN:
- (U) ($10) Complete MS III for HSBCA 2nd Qtr.
- (U) ($2,462) Analyze the effects of Communications Support System/Tactical Data Information Exchange Subsystem (CSS/TADIXS) Radio Room (RR) on antennas and develop necessary changes to ensure compatibility.
- (U) ($666) Complete DT-II for AN/BST-1 Upgrade.
- (U) ($768) Conduct DT-IIA and continue engineering efforts for the Improved AN/BRA-34.
- (U) ($500) Deploy prototype ADS, conduct DT and prepare for MS III.

3. (U) FY 1996 PLAN:
- (U) ($25) Complete MS III for AN/BST-1 UPGRADE.
- (U) ($700) CSS Antenna Improvements - Develop changes resulting from analysis.
- (U) ($555) AN/BRA-34 - Conduct DT-IIB AND OT, Award Low-Rate Initial Production (LRIP) option and conduct MS III review.
- (U) ($4,746) HDA - Develop specifications and conduct analysis on SHF/Very High Frequency (VHF) Antenna System.
- (U) ($10,600) EHF NPM - Continue preparation for and complete MS II.
- (U) ($1,170) ADS - Conduct MS III review and continue with P^{3}I upgrades in support of CSS/TADIXS improvements.

4. (U) FY 1997 PLAN:
- (U) ($7,493) EHF NPM - Award Engineering Model Development (EMD) contract for two EMD systems.
- (U) ($2,000) ADS - Test and field P^{3}I upgrades for EHF and VHF antenna control/routing.
- (U) ($1,600) Analyze and prepare necessary changes from Antenna CSS/TADIXS Shipboard Automated Communications Control System (SACCS) compatibility.
- (U) ($4,592) HDA - Enter EMD phase and award contract for SHF Antenna development.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X0742 PROJECT TITLE: Submarine Integrated Antenna System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	14,873	4,604		
(U) FY 1995 Appropriated:		4,604		
(U) Adjustments from Appropriated/FY95 PRESBUDG:	-1,700	-198		
(U) FY 1996/97 PRESBUDG Submit:	13,173	4,406	17,796	15,692

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94 control reflects a reprogramming of (-)1,700K to Project X1411, SSN-ICS, for CSS radio room integration. FY 1995 was decreased $198K, $49K to accommodate Small Business Innovative Research and $149K to reflect undistributed reductions for travel, consulting services, university research and Federally Funded Research Centers.

(U) Schedule: EHF NPM delayed 1 year.

(U) Technical: N/A

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN Line 313000 (partial)	1,492	2,718	2,438	7,462	21,600	34,749	39,078	54,859	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0602232N (Space and Electronic Warfare (SEW) Technology) - Provides input to this program.

(U) PE 0303109N (Satellite Communications) - Provides for the EHF transmitter and receiver that utilizes the antenna developed under this program.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X0742 PROJECT TITLE: Submarine Integrated Antenna System

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		2Q HSBCA MS III	4Q I-BRA-34 MS III 4Q HDA SHF MS II 2Q EHF NPM MS II 2Q ADS MS III 2Q AN/BST-1 MS III		CONT
Engineering Milestones					CONT
T&E Milestones		3Q ADS DT 3Q AN/BST-1 DT II 3Q I-BRA-34 DT IIA	1Q I-BRA-34 DT IIB 3Q I-BRA-34 OT	CONT	
Contract Milestones			1Q EHF NPM E&MD PH I 3Q EHF NPM E&MD PH II	4Q ADS P³I	CONT

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna Development

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	1,200	260	1,500	1,500
b. Systems Engineering	555	332	500	500
c. Software Development	225	250	500	750
d. Hardware Development	8,822	1,970	13,071	10,735
e. System Test & Evaluation	1,980	1,434	1,200	1,300
f. Integrated Logistic Support	231	100	600	500
g. Site/Platform Integration	160	60	425	400
Total	13,173	4,406	17,796	15,685

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X0742 PROJECT TITLE: Submarine Integrated Antenna System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
AMERIND Alexandria, VA (AN/BST-1)	CP	9/91	8,028	8,028	5,623	2,305	100	0	0	0	8,028
RAYTHEON Newport, RI (EHF-NPM)	CP	3/94	14,443	14,443	0	1,050	0	7,225	5,100	1,068	14,443
Miscellaneous Contractors						793	275	317	300	CONT.	CONT.
NAVUNSEAWARCEN New London, CT	WX	10/93	CONT.	CONT.	0	5,686	3,417	8,594	8,085	CONT.	CONT.
Miscellaneous Labs	WX	10/93	CONT.	CONT.	0	3,189	414	1,400	2,000	CONT.	CONT.
Support and Management											
ADVANCED COMMUNICATION SYSTEMS, INC. Arlington, VA	CPFF	10/93	CONT.	CONT.	0	150	200	200	200	CONT.	CONT.
Test and Evaluation - Not Applicable											

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Integrated Antenna System

GOVERNMENT FURNISHED PROPERTY - Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	5,623	13,023	4,206	17,596	15,485	CONT.	CONT.
Subtotal Support and Management	0	150	200	200	200	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	CONT.	CONT.
Total Project	5,623	13,173	4,406	17,796	15,685	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X1411 Submarine Tactical Communications System	3,238	1,710	5,273	4,627	4,999	5,954	6,370	6,517	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Tactical Communications System project provides attack submarines with communications systems designed to: (a) enhance data throughput; (b) copy tactical data networks, such as Tactical Data Information Exchange System (TADIXS); (c) be interoperable with other U.S. and allied military networks; and (d) improve reliability, maintainability, and availability. This can be accomplished by providing the attack submarine with a properly integrated mix of Navy standard communication equipment covering a wide range of frequencies and modes. Included in this project is the Submarine Communications System Engineering Program (SCSEP) which provides a system engineering approach for the design and evaluation of new and existing submarine radio rooms. In addition, the project provides support for the Land-Based Submarine Radio Room (LBSRR) for new systems evaluation and integration. The project includes system engineering efforts associated with demonstration of new technology which will allow the submarine to be a participant in battle group and joint operations. The new technology will increase the submarine's communications, command, and control capability. This project funds research for equipment in communications Master Plan (Program Summary). It specifically funds the development of the improved Submarine Message Buffer (SMB) and Communications Support System (CSS). These two efforts will develop the computer controlled radio room for submarines. The CSS is envisioned to be the communications architecture of the Navy's future. Ships without CSS capability will be limited in their interoperability with the rest of the Navy. Lastly, this program provides funds to integrate Joint Tactical Information Distribution System (JTIDS) into the CSS.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($2,541) Continued evaluation of radio room miniaturization, integration, and automation systems and candidate equipments for new radio rooms.
- (U) ($471) Continued SMB P^{3}I efforts.
- (U) ($226) Continued SCSEP engineering development efforts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X1411
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Tactical Communications System

2. (U) FY 1995 PLAN:

- (U) ($1,017) Continue evaluation of radio room miniaturization, integration, and automation systems and candidate equipments for new radio rooms.
- (U) ($163) Continue SCSEP engineering development efforts.
- (U) ($530) Continue SMB P³I efforts.

3. (U) FY 1996 PLAN:

- (U) ($2,200) Continue improved SMB P³I development and begin testing.
- (U) ($1,880) Continue development of the Phase I CSS implementation.
- (U) ($600) Begin development of the component portion of the Hi Data Rate System.
- (U) ($593) Start Link 16 JTIDS integration.

4. (U) FY 1997 PLAN:

- (U) ($1,900) Complete DT/Operational Testing (OT) testing of ISMB.
- (U) ($277) Continue development of the Hi Data Rate System.
- (U) ($2,000) Complete CSS Phase I Integration.
- (U) ($450) Continue Integration and developmental testing for JTIDS.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X1411
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Tactical Communications System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,538	1,828		
(U) FY 1995 Appropriated:		1,828		
(U) Adjustments from Appropriated/FY95 PRESBUDG:	+1,700	-118		
(U) FY 1996/97 PRESBUDG Submit:	3,238	1,710	5,273	4,627

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94 increase reflects a $1,700K reprogramming action from X0742 for the CSS radio room integration. FY 95 decreased $118K, $13K to accommodate Small Business Innovative Research and $105K to reflect undistributed reductions for travel, consulting services, university research and Federally Funded Research Centers.

(U) Schedule: Not applicable.

(U) Technical: Implementation of CSS Phase I, which includes more automation of communication functions.

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

FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN Line 313000 (partial)									
3,706	13,657	15,523	35,638	31,063	23,202	20,302	16,600	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204163N (Fleet Communications)
(U) PE 0602232N (Space & Electronic Warfare (SEW) Technology)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X1411
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Tactical Communications System

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones				SMB P³I MS IV 1/97	
Engineering Milestones					
T&E Milestones				SMB P³I DT IIIA 10/96	
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X1411 PROJECT TITLE: Submarine Tactical Communications System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	647	360	798	722
b. Systems Engineering	481	163	616	546
c. Software Development	1,790	1,005	2,613	1,900
d. Hardware Development	320	182	1,246	1,459
Total	3,238	1,710	5,273	4,627

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X1411 PROJECT TITLE: Submarine Tactical Communications System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NCCOSC San Diego, CA	WX	10/93	N/A	N/A	0	1,316	1,700	2,886	2,881	CONT.	CONT.
NAVUNSEAWARFCEN New London, CT	WX	10/93	N/A	N/A	0	1,563	0	1,487	1,036	CONT.	CONT.
Miscellaneous	WX	10/93	N/A	N/A	0	299	10	500	300	CONT.	CONT.
Support and Management											
ADVANCED COMMUNICATION SYSTEMS, INC. Arlington, VA	CPFF	MISC	TBD	TBD	0	0	0	400	410	CONT.	CONT.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not Applicable

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X1411 PROJECT TITLE: Submarine Tactical Communications System

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	3,238	1,710	4,873	4,217	CONT.	CONT.
Subtotal Support and Management	0	0	0	400	410	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	3,238	1,710	5,273	4,627	CONT.	CONT.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT:0604504N
PROGRAM ELEMENT TITLE:Air Control (Eng)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0993	Carrier Air Traffic Control									
	2,721	2,080	4,195	6,470	7,108	2,082	1,979	2,028	CONT.	CONT.
W1657	Air Traffic Control (ATC) Improvements									
	6,243	4,236	2,203	979	125	1,039	1,067	1,094	CONT.	CONT.
X0718	Marine Air Traffic Control Automatic Landing System (MATCALS)									
	845	1,529	1,417	1,410	1,332	1,707	1,724	3,326	CONT.	CONT.
TOTAL	9,809	7,845	7,815	8,859	8,565	4,828	4,770	6,448	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element provides for the development, integration, and testing of automated Air Traffic Control (ATC) hardware and software required to provide improved flight safety and more reliable all-weather ATC and landing capabilities ashore and afloat. Funded programs are required to upgrade or replace aging ATC and approach/landing equipment on aircraft, aircraft carriers, amphibious ships, Naval Air Stations, and Navy/Marine Corps tactical/expeditionary airfields and remote landing sites. Development of a Global Positioning System (GPS) data link is required to enable the transfer of precise positioning information between ships and aircraft.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0993 Carrier Air Traffic Control	2,721	2,080	4,195	6,470	7,108	2,082	1,979	2,028	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Air Traffic Control Centers identify, marshal, and direct aircraft within 50 Nautical Miles (nm) to a ship's Automatic Carrier Landing System (ACLS) and Independent Landing Monitor (ILM). The ACLS and ILM then provide precise automatic control and verification of aircraft during their final approach and landing sequence. Due to the AN/SPN-46 radar's acquisition limitation in rain, a Moving Target Detection (MTD) capability is required. This technology is also being evaluated for use in the AN/SPN-43 search surveillance radar.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,900) Continued MTD development for AN/SPN-46(V) to increase performance capability in rain.
- (U) ($225) Began evaluation of MTD technology for use in AN/SPN-43 radar.
- (U) ($596) Provided engineering, test and evaluation, and project management support efforts for AN/SPN-46(V) MTD and AN/SPN-43 MTD.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0993
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: Carrier ATC

2. (U) FY 1995 PLAN:

- (U) ($1,500) Continue MTD engineering. Begin initial testing/incorporation efforts.
- (U) ($120) Continue MTD for the AN/SPN-43 radar.
- (U) ($460) Provide engineering, test and evaluation, and project management support for MTD.

3. (U) FY 1996 PLAN:

- (U) ($3,200) Continue engineering development of MTD for AN/SPN-46(V).
- (U) ($845) Provide engineering support, test, & evaluation and project management support for MTD and AN/SPN-46(V).
- (U) ($150) Complete development of MTD for AN/SPN-43 radar.

4. (U) FY 1997 PLAN:

- (U) ($5,706) Complete MTD development.
- (U) ($764) Provide engineering support, test & evaluation and management support for MTD.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT NUMBER: W0993 PROJECT TITLE: Carrier ATC

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,721	2,135	XXX	XXX
(U) FY 1995 Appropriated:	XXX	2,135	XXX	XXX
(U) Adjustments from Appropriated/PRESBUDG:	0	-55	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	2,721	2,080	4,195	6,470

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 adjustments reflect various Congressional undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN line 283200,283205, and 283206	9,415	11,650	6,659	17,620	13,501	13,292	13,065	13,308	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0993
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: CARRIER ATC

(U) RELATED RDT&E:

(U) PE 0603512N Carrier Systems Development
(U) PE 0604512N Shipboard Aviation Systems

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones	2Q-3Q MTD/SPN-46 Integration				Cont.
T&E Milestones	-	2Q-3Q MTD Testing	2Q-3Q MTD Testing	2Q-3Q MTD Testing	Cont.
Contract Milestones	3Q Definitized MTD letter Contract	-	-	-	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0993
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: CARRIER ATC

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Dev.	1,976	1,750	3,635	5,819
b. Systems Engineering Sup.	541	210	385	471
c. T & E Support	150	50	50	50
d. Project Management Sup.	50	50	100	100
e. Travel	4	20	25	30
Total	2,721	2,080	4,195	6,470

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT NUMBER: W0993 PROJECT TITLE: Carrier ATC

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Sierra Nevada Reno, NV	CPFF	5/93	14,727	14,727	1,500	1,976	1,750	3,635	5,819	0	14,727
Miscellaneous		Various	-	-	1,486	541	210	385	471	Cont.	Cont.
Support and Management											
Miscellaneous		Various	-	-	85	54	70	125	130	Cont.	Cont.
Test and Evaluation											
Miscellaneous		Various	-	-	235	150	50	50	50	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY : Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (ENG)
PROJECT NUMBER: W0993
PROJECT TITLE: Carrier ATC

	*Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	2,986	2,495	1,960	4,020	6,290	Cont.	Cont.
Subtotal Support and Management	85	76	70	125	130	Cont.	Cont.
Subtotal Test and Evaluation	235	150	50	50	50	Cont.	Cont.
Total Project	3,306	2,721	2,080	4,195	6,470	Cont.	Cont.

*Total FY 93 & Prior reflects FYs 93 & 92.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W1657 ATC Improvements	6,243	4,236	2,203	979	125	1,039	1,067	1,094	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for engineering development, integration, adaptation, and testing of new and/or modernized real-time Air Traffic Control (ATC) systems, air navigational aids and landing systems, ATC communications systems i.e., Fleet Area Control and Surveillance Facility (FACSFAC) and Ranges that must be modified to ensure continued interoperability with the National Airspace System (NAS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($605) Completed various software and hardware upgrades for FACSFAC .
- (U) ($1,775) Continued DOD Common Console testing.
- (U) ($350) Continued Navy unique range/ATC interface.
- (U) ($700) Participated in GPS studies and ensured any Navy ATC unique requirements were addresssed.
- (U) ($2,813) Provided engineering, technical, and program management support for projects.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W1657
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: ATC

2. (U) FY 1995 PLAN:

- (U) ($1,105) Install DOD Common Console Prototypes at Marine Corps Air Station, Camp Pendleton for testing/validation.
- (U) ($950) Continue GPS/ATC Research and Development Analysis.
- (U) ($150) Continue with US Air Force in Military Airspace Management System (MAMS) development efforts in preparation for FY 1996 testing.
- (U) ($2,031) Provide engineering, technical, test and evaluation, and program management support for projects.

3. (U) FY 1996 PLAN:

- (U) ($2,050) Continue GPS data link development efforts.
- (U) ($153) Provide in-house engineering support and program management support.

4. (U) FY 1997 PLAN:

- (U) ($900) Complete GPS data link efforts.
- (U) ($79) Provide in-house/program management support.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROGRAM ELEMENT TITLE: Air Control (Eng)

PROJECT NUMBER: W1657 PROJECT TITLE: ATC Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	6,243	4,369	XXX	XXX
(U) FY 1995 Appropriated:	XXX	4,369	XXX	XXX
(U) Adjustments from Appropriated/PRESBUDG:	0	-133	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	6,243	4,236	2,203	979

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 adjustments reflect various Congressional undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN line 284000 and 284006	-	-	-	2,030	13,787	42,192	41,780	42,867	97,047	239,703

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones		2Q Evaluate GPS data link	2Q-4Q Test DCC/ GPS	1Q-2Q Evaluate DCC prototype	
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Harware	618	155	-	-
b. Ancillary Hardware Dev	415	125	-	-
c. Software Dev	325	400	156	125
d. Systems Eng	4,056	2,921	1,547	533
e. Training Dev	250	100	50	50
f. ILS	336	175	100	50
g. T & E	50	100	100	100
h. Project Support	128	200	200	100
i. Travel	65	60	50	21
Total	6,243	4,236	2,203	979

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NISE EAST DET St Inigoes	WX	Various	-	-	16,077	2,212	2,015	1,325	510	Cont.	Cont.
NISE EAST Charleston	WX	Various	-	-	-	1,912	1,671	478	198	Cont.	Cont.
NAWC Pax River	WX	Various	-	-	-	1,100	-	-	-	Cont.	Cont.
Miscellaneous Various		Various	-	-	-	776	190	50	50	Cont.	Cont.
Management and Support											
Miscellaneous Various		Various	-	-	1,920	193	260	250	121	Cont.	Cont.
Test and Evaluation											
Miscellaneous Various		Various	-	-	1,250	50	100	100	100	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	16,077	6,000	3,876	1,853	758	Cont.	Cont.
Subtotal Support and Management	1,920	193	360	250	121	Cont.	Cont.
Subtotal Test and Evaluation	1,250	50	100	100	100	Cont.	Cont.
Total Project	19,247	6,243	4,236	2,203	979	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0718 Marine Air Traffic Control Automatic Landing System (MATCALS)	845	1,529	1,417	1,410	1,332	1,707	1,724	3,326	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Provide for continued development, integration, and testing of hardware and software to meet requirements for all-weather operation and improved flight safety of Air Traffic Control and Automated Landing System (ALS) at Navy/Marine Corps expeditionary airfields.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($258) Completed certification and field software for MODE I ALS capability.
- (U) ($565) Developed, tested and certified TADIL-B/C Version I Operational Software.
- (U) ($22) Studied AN/TPN-22 Modulator design changes and Communications System Remote Landing Site Tower (RLST) compatibility issues.

2. (U) FY 1995 PLAN:

- (U) ($508) Develop, test, and begin certification of Version M software for increased automation for MATCALS control of fleet air.
- (U) ($53) Analyze and evaluate performance and safety improvements from applications of Differential Global Positioning Satellite data.
- (U) ($968) Develop, test and certify improvements in TADIL-B/C software to obtain improved flight safety and control of aircraft in tactical operations and Version M of the MATCALS Operational Software.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

3. (U) FY 1996 PLAN:

- (U) ($1,293) Develop, test and begin certification of Version N software enhancements, as an eventual replacement for the previous version of software, required to accommodate control of new and/or modernized Fleet aircraft.
- (U) ($124) Develop, test and begin certification of differential GPS approach and landing capability for Fleet aircraft using MATCALS.

4. (U) FY 1997 PLAN:

- (U) ($950) Complete development, testing and certification of Version N software enhancements required to accommodate control of new and/or modernized Fleet aircraft.
- (U) ($460) Complete development, testing and certification of Differential GPS approach and landing capability for Fleet aircraft using MATCALS.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	845	1,629	XXX	XXX
(U) FY 1995 Appropriated:	0	1,629	XXX	XXX
(U) Adjustments from PRESBUDG:	0	-100	XXX	XXX
(U) FY 1996/97 PRESBUDG Budget Submit:	845	1,529	1,417	1,410

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 was decreased by $100K, $28K to accomodate small business innovative research and $72K to reflect undistributed reductions for travel, consulting services, and university research.

(U) Schedule: No changes.

(U) Technical: No changes.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN BLI 2815	1,425	4,311	1,588	4,316	10,445	16,392	13,067	13,908	CONT.	CONT.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	TPN-22 Eq Synthszr FOC Sep 94 Compile L Op S/W Deliv To FMF Jul 94	UYQ-42 Upgrade IOC Dec 94 TPN-22 SSM IOC 3rd Qtr. Mode I Landing Capable 2nd Qtr	Compile M Op S/W Deliv to FMF 2nd Q TPN-22 SSM FOC 2nd Qtr. RLST IOC 4th Qtr TPN-30 Mod IOC Dec 95	TPN-30 Mod FOC Oct 96	RLST Compt by FY00

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Engineering Milestones		Compile N Op S/W SCP's Comp by 9/95	DGPS Spec by 3rd Qtr	TPN-22 Upgrd Spec by 3rd Qtr Compile P Op S/W SCP's compt by 9/97 RadarLink spec by 3rd Qtr Havequick spec by 3rd Qtr	TPN-22 Upgrd Compt by FY04 Cmpl P Compt by FY04 RadarLink compt by FY04 Havequick compt by FY04
T&E Milestones		TPN-30 Mod 1st Art test Nov 94 TPN-22 SSM 1st Art test Nov94-Jan95 UYQ-42 Upgrade 1st del Jul 95 Compile M Govt test 4th Qtr.	RLST 1st Art Test Feb-May 96		DGPS compt FY00

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Contract Milestones	TPN-30 Mod Contract Award Jun 94 RLST Contract award Aug 94		Follow-on Op S/W Contract award 3rd Qtr.	DGPS contract award 3rd Qtr.	
		UYQ-42 Upgrade contract award Mar 95			

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Software Development	650	1,178	1,092	1,029
b. Hardware Development	22	25	25	25
c. System Test & Evaluation	173	326	300	356
Total	845	1,529	1,417	1,410

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development	Various		5,259	5,259	2,608	672	1,203	1,117	1,054	CONT.	CONT.
Support and Management			0	0	0	0	0	0	0		
Test and Evaluation			406	406	200	173	326	300	356	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: X0718
PROGRAM ELEMENT TITLE: Air Control PROJECT TITLE: Marine Air Traffic Control Automatic Landing System

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	2,608	672	1,203	1,117	1,054	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0		
Subtotal Test and Evaluation	200	173	326	300	356	CONT.	CONT.
Total Project	2,808	845	1,529	1,417	1,410	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
V1440 EMSP	13,173	11,541	8,342	5,294	2,996	3,147	1,546	1,653	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Enhanced Modular Signal Processor (EMSP) is a modular, distributed parallel state-of-the-art signal processor to provide increased performance capability for multi-platform ASW weapon systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,976) Continued DT-III Testing and continue ASIP including acceptance testing.
- (U) ($7,245) Supported software development, integration, testing, critical engineering design support for Development and Operational Testing (DT/OT) for user systems (SEM E).
- (U) ($3,952) Continued Beta Level Application and risk mitigation IV&V testing.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROJECT NUMBER: V1440
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT TITLE: EMSP

2. (U) FY 1995 PLAN:

- (U) ($1,068) Continue DT-III Testing (Reliability Demonstration) and complete ASIP development.
- (U) ($8,079) Support software development, integration, testing, critical engineering design support for Development and Operational Testing (DT/OT) for user system (SEM E).
- (U) ($2,394) Continue risk mitigation IV&V testing.

3. (U) FY 1996 PLAN:

- (U) ($793) Complete DT-III Testing (Reliability Demonstration).
- (U) ($5,839) Support software development, integration, testing, critical engineering design support for Development and Operational Testing (DT/OT) for ALFS, SURTASS, AN/SQQ-89 and AN/BSY-2 systems.
- (U) ($1,710) Continue risk mitigation IV&V testing.

4. (U) FY 1997 PLAN:

- (U) ($4,231) Support software development, integration, testing, critical engineering design support for Development and Operational Testing (DT/OT) for ALFS, SURTASS. AN/SQQ-89 and AN/BSY-2 systems.
- (U) ($1,063) Continue risk mitigation IV&V testing.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Engineering and Manufacturing Development because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT NUMBER: V1440 PROJECT TITLE: EMSP

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	13,173	11,970	XXX	XXX
(U) FY 1995 Appropriated:	XXX	11,970	XXX	XXX
(U) Adjustments from Approp/FY 1995 PRESBUDG:	0	-429	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	13,173	11,541	8,342	5,294

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease of $429K in FY 95 is due to general reduction.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 105	7,480	5,052	6,957	2,562	2,529	3,144	3,113	3,206	CONT	CONT
(U) OPN Line 79	46,600	35,362	26,100	0	0	0	0	0	CONT	CONT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT NUMBER: V1440 PROJECT TITLE: EMSP

(U) RELATED RDT&E:

(U) PE 0204311N (Integrated Surveillance System) Provides funding for SURTASS unique interfaces and requirements for the Acoustic Systems Implementation Program (ASIP).

(U) PE 0205620N (Surface ASW Combat System Integration) Provides funding for AN/SQQ-89 unique interfaces and requirements for the Acoustic Systems Implementation Program (ASIP).

(U) PE 0604212N (Anti-Submarine Warfare and Other Helicopter Development) Provides funding for ALFS unique interfaces and requirements for the Acoustic Systems Implementation Program (ASIP).

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones	9/94 ASIP NTDS-B DEV Units	2/95 ASIP FDDI DEV Units			CONT
T&E Milestones	9/94 NTDS-B	ALFS Reliability Demo Test	SURTASS Reliability Demo Test/SQQ-89 & DDG 993 DEV Test	ALFS DEV Test/ SQQ-89 & DDG 993 OPER Test	CONT
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor
PROJECT NUMBER: V1440
PROJECT TITLE: EMSP

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Software Development	3,186	2,770	2,002	1,271
b. Systems Engineering	6,212	5,424	3,921	2,488
c. Integrated Logistics Support	2,072	1,847	1,335	847
d. Configuration Management	234	196	142	90
e. Project Management Support	1,136	800	500	500
f. Travel	125	100	50	50
g. Miscellaneous	208	404	392	48
Total	13,173	11,541	8,342	5,294

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604512N
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2232 CV Launch and Recovery Systems	1,388	1,521	11,343	9,647	9,788	11,860	11,975	12,293	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Navy unique program addresses the Engineering and Manufacturing Development (E&MD) of all systems required to launch and recover Navy/Marine Corps aircraft (fixed wing, rotary wing and Vertical/Short Take-Off and Landing (VSTOL)) operating aboard aircraft carriers (CV/CVN), amphibious assault ships (LHA/LHD) and aviation facility ships. This program includes E&MD of:

- (U) The Improved Carrier Optical Landing System (ICOLS), which includes the Improved Fresnel Optical Landing System (IFLOLS) and the Long Range Line-up System (LRLS), to provide longer range, higher accuracy visual landing aids (VLA) for pilots landing on aircraft carriers.

- (U) The Mark 7 Mod 4 (MK 7 MOD 4) arresting gear to increase the aircraft landing weight capability.

- (U) The Integrated Shipboard Information System (ISIS) to employ existing and emerging technology to enable rapid input, collection, processing and distribution of relevant air operations information and then display this information on electronic monitors in all air operations work centers throughout the ship.

- (U) The Aviation Data Management and Control System (ADMACS) as a real-time, configuration managed, tactical, local area network, for the specific support of the Air Department and the Aircraft Launch and Recovery Equipment (ALRE) data and C^{4}I requirements on ships. It also provides connectivity among ALRE systems such as ICOLS, ISIS and ALRCS and links Air Operations with other onboard tactical and support networks.

- (U) The Advanced Launch and Recovery Control Systems (ALRCS) to introduce modern, modularized computer control systems to the catapults and arresting gear on aircraft carriers.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199!

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

- (U) The Virtual Imaging System for Approach and Landing (VISUAL) to provide the ship's company and pilots with enhanced images of the aircraft and ship, respectively, in low visibility and night conditions.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to a production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

   - (U) ($849) Completed design of the ICOLS LRLS Engineering Development Model (EDM) and initiated shipboard prototype demonstration.

   - (U) ($539) Completed preliminary design of Mark 7 Mod 4 arresting gear EDM.

2. (U) FY 1995 PLAN:

   - (U) ($1,521) Complete shipboard prototype demonstration of ICOLS LRLS. Issue Request for Proposals (RFP) for contract to develop ICOLS LRLS EDM as a modified Non-Developmental Item (NDI).

3. (U) FY 1996 PLAN:

   - (U) ($4,370) Award contract for delivery of the ICOLS LRLS EDMs.

   - (U) ($1,659) Complete fabrication of ICOLS IFLOLS EDM and conduct Technical Evaluation (TECHEVAL) and start Operational Evaluation (OPEVAL).

   - (U) ($2,940) Initiate design of the ISIS EDM.

   - (U) ($2,364) Initiate design of the ADMACS EDM.

   - (U) ($10) NAVAIRHQ CV Launch & Recovery Systems Program support travel.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199!

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

4. (U) FY 1997 PLAN:

- (U) ($1,950) Conduct TECHEVAL and OPEVAL of ICOLS LRLS EDMs and prepare for a Milestone III production decision.
- (U) ($1,168) Complete OPEVAL of ICOLS IFLOLS EDMs and prepare for a Milestone III production decision.
- (U) ($4,117) Complete fabrication of ISIS EDM and conduct shorebased TECHEVAL.
- (U) ($2,400) Complete fabrication and integration of ADMACS EDM and conduct shorebased TECHEVAL.
- (U) ($12) NAVAIRHQ CV Launch & Recovery Systems Program support travel.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,388	1,543	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,543	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-22	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	1,388	1,521	11,343	9,647

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 no change. FY 1995 reflects a reduction of $22K for SBIR and Congressional undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

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

(U) RELATED RDT&E:

(U) PE 0603512N (Carrier Systems Development)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		IFLOLS: 2Q MSII LRLS: 3Q MSII	ISIS: 2Q MSII ADMACS: 2Q MSII	ISIS: 4Q LRIP ADMACS: 4Q LRIP	IFLOLS: 98/1Q MSIII LRLS: 98/2Q MSIII ALRCS: 98/2Q MSII ISIS: 99/2Q MSIII ADMACS: 99/2Q MSIII VISUAL: 00/2Q MSII
Engineering Milestones		IFLOLS: 2Q CDR	ISIS: 4Q CDR ADMACS: 4Q CDR		ALRCS: 99/2Q CDR VISUAL: 01/2Q CDR
T&E Milestones			IFLOLS: 4Q OT&E	LRLS: 3Q OT&E	ISIS: 98/4Q OT&E ADMACS: 98/4Q OT&E ALRCS: 00/4Q OT&E
Contract Milestones			LRLS: 1Q EDM Award		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199!

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	765	838	5,670	4,825
b. Software Development	345	385	2,835	2,415
c. Integrated Logistics Support	210	225	1,700	1,440
d. Developmental Test & Evaluation	68	73	1,138	967
Total	1,388	1,521	11,343	9,647

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAWCAD-LKE	WR	9/30/94	N/A	N/A	0	1,388	1,521	9,343	9,647	CONT.	CONT.
TBD	FPIF	11/15/95	2,000	2,000	0	0	0	2,000	0	0	2,000
Support and Management:					0	0	0	0	0	0	0

Test and Evaluation: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY: Not applicable.							
Subtotal Product Development	0	1,388	1,521	11,343	9,647	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	1,388	1,521	11,343	9,647	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0410 CBR Defense (EMD)	5,086	2,655	0	0	0	0	0	0	0	7,741
S1828 Combat Readiness & Sustainability	1,230	1,378	1,005	817	787	927	930	1,011	CONT.	CONT.
S2054 Integrated Fire Protection/Damage Control	3,852	4,451	3,902	3,467	3,333	3,886	3,907	4,015	CONT.	CONT.
TOTAL	10,168	8,484	4,907	4,284	4,120	4,813	4,837	5,026	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports the full scale development of equipment/systems to enable continued, effective combat missions through protection from weapons effects due to hostile actions and peacetime accidents. This program also supports the engineering development of improved Damage Control/Fire Protection and Firefighting equipment, devices, and systems for rapid control/suppression of damage/fire with retention of ship mission.

(U) This program also develops chemical, biological, and radiological (CBR) defensive systems and concepts for surface ships, required to counter CBR threats in the near term (1990s) as identified in Defense Planning Guidance. Development addresses individual and collective protection, detection and monitoring, and decontamination equipment.

(U) PBD 250 directs, starting in FY 1996, that services for P.E. 0604516N/S0410 budgets for nuclear, biological, and chemical (NBC) defense programs be consolidated in OSD accounts. P.E. 0604384D/S041 applies to this project and budget activity.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1828 Combat Readiness & Sustainability	1,230	1,378	1,005	817	787	927	930	1,011	CONT.	CONT.

A.(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports the full scale engineering development of systems and components to provide protection from weapons effects for continued combat missions. Includes development of armor system for defeating rocket and missile threats, electrical components which support uninterruptible combat capability, and blast tolerant magazine boundaries.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($472) Initiated development of blast tolerant missile and torpedo magazine boundaries (BTMB) designed to prevent impact of the boundary with stowed munitions. Initiated construction of full scale blast chamber.
- (U) ($358) Conducted land-based demonstration of Navy Standard Electronic Power System (NSEPS) and prepared specification.
- (U) ($300) Conducted test and evaluation (T&E) of prototype shock hardened combat system circuit breakers.
- (U) ($100) Conducted fire vulnerability tests of Low-Intensity-Conflict (LIC) armor systems designed to defeat rocket and small missile threats.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S1828 PROJECT TITLE: Combat Readiness & Sustainability

2. (U) FY 1995 PLAN:

- (U) ($700) Complete construction of blast chamber for BTMB effort and conduct testing; prepare standard drawing.
- (U) ($310) Complete land-based testing of NSEPS and initiate ship-based testing.
- (U) ($328) Complete T&E on shock hardened circuit breaker; prepare specification.
- (U) ($40) Complete fire vulnerability tests of LIC armor systems. Develop performance specification.

3. (U) FY 1996 PLAN:

- (U) ($275) Complete ship-based testing of NSEPS and finalize specification.
- (U) ($730) Initiate engineering development of electrical device for rapidly clearing weapons-induced faults located on a main bus duct or feeders. (Transitioned from P.E. 0603514N, S0384, Ship Survivability (Adv)).

4. (U) FY 1997 PLAN:

- (U) ($817) Complete development of electrical fault clearing device and conduct acceptance testing. Complete planning for full scale weapons effects tests to validate performance in a threat environment.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S1828
PROJECT TITLE: Combat Readiness & Sustainability

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,230	1,382	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,382	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-4	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:(PRESBUDG CONTROLS)	1,230	1,378	1,005	817

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Various FY 95 reductions, including University Research, Travel, and 1995 SBIR.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S1828 PROJECT TITLE: Combat Readiness & Sustainability

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

(U) Specification changes included in new construction ships (SCN funding). Procurement information not available at this level of detail.

(U) RELATED RDT&E:

(U) PE 0603514N, Project S0384 (Ship Survivability (Adv))

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Engineering Milestones	4Q NSEPS Specification				
	2Q Blast Tolerant Magazine Boundary Design Options/ Test Plan	4Q Blast Tolerant Magazine Boundary Standard Drawings			
	4Q Shock Hardened Circuit Breaker Prototype	4Q Shock Hardened Circuit Breaker Specification			

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S1828 PROJECT TITLE: Combat Readiness & Sustainability

D. (U) SCHEDULE PROFILE: (Cont.)

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
	4Q LIC Armor Fire Vulnerability Assessment	4Q LIC Armor Performance Specification			
			4Q Electrical Fault Clearing Device Engineering Development Model	1Q Electrical Fault Clearing Device Full Scale Test Plan	Continued
T&E Milestones	3Q NSEPS Land-Based Test	4Q NSEPS Ship-Based Tests	2Q NSEPS Ship-Based Tests		
		2Q Blast Tolerant Magazine Boundary Full Scale Tests			
	4Q Prototype Shock Hardened Circuit Breaker Tests				

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S1828
PROJECT TITLE: Combat Readiness & Sustainability

D. (U) SCHEDULE PROFILE: (Cont.)

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
	4Q LIC Armor Fire Vulnerability Tests				
				4Q Electrical Fault Clearing Device Acceptance Tests	Cont.
Contract Milestones	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S1828
PROJECT TITLE: Combat Readiness & Sustainability

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Engineering Assessments/ Design Studies	251	40	0	0
b. Test and Evaluation	720	1,210	455	612
c. Specifications/Design Standard Preparation	0	118	50	0
d. Hardware Development	250	0	495	200
e. Software Development	0	0	0	0
f. Travel	9	10	5	5
Total	1,230	1,378	1,005	817

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S1828
PROJECT TITLE: Combat Readiness & Sustainability

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAVSURFWARCEN WR Carderock Division Dahlgren, VA		10/94	Cont.	Cont.		650	678			CONT.	CONT.
NAVSURFWARCEN WR Carderock Division Bethesda, MD						580	700	1,005	817	CONT.	CONT.
Support and Management						0	0	0	0	CONT.	CONT.
Test and Evaluation						0	0	0	0	CONT.	CONT.

RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

PROJECT NUMBER: S1828
PROJECT TITLE: Combat Readiness & Sustainability

GOVERNMENT FURNISHED PROPERTY Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development		1,230	1,378	1,005	817	CONT.	CONT.
Subtotal Support and Management		0	0	0	0	CONT.	CONT.
Subtotal Test and Evaluation		0	0	0	0	CONT.	CONT.
Total Project		1,230	1,378	1,005	817	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2054 Integrated Fire Protection/Damage Control	3,852	4,451	3,902	3,467	3,333	3,886	3,907	4,015	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports the engineering development and fleet introduction of advanced, survivable damage control and information management (IM) systems which enables a rapid response to wartime and peacetime casualties for effective recovery/restoration. This project also develops total ship tactics and doctrine for effectively fighting major ship threatening conflagrations (fire, smoke, flooding) resulting from wartime threats and peacetime accidents.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($112) Modified quick acting watertight door (QAWT) and completed standard drawings.
- (U) ($972) Completed multi-station at-sea evaluation of Integrated Survivability Management System (ISMS) on selected amphibious ships.
- (U) ($538) Completed multi-station evaluation of ISMS in actual firefighting environment onboard ex-USS SHADWELL.
- (U) ($474) Completed ISMS software documentation and configuration management plan.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S2054 PROJECT TITLE: Integrated Fire Protection/Damage Control

- (U) ($440) Initiated packaging optimization of the hand-held Repair Team Terminal (RTT) device which provides for communication with ISMS.
- (U) ($350) Assessed vulnerability of missile magazine fire suppression systems to weapons effects.
- (U) ($966) Initiated multi-compartment integrated firefighting experiments onboard ex-USS SHADWELL in support of developing improved tactics and doctrine for vertical entry into Class B fires, simultaneous firefighting and dewatering, and ventilation of compartments during active firefighting.

2. (U) FY 1995 PLAN:

- (U) ($1,615) Conduct integrated firefighting experiments on board ex-USS SHADWELL in support of developing improved tactics and doctrine for attacking major machinery space fires. Upgrade the ex-USS SHADWELL to meet safety requirements and overall program objectives.
- (U) ($425) Initiate evaluation of state-of-the-art commercial fire and smoke sensor systems to provide location of primary damage zone and real-time damage tracking (RTDT). Procure commercial sensor systems and initiate land and ship based performance evaluations.
- (U) ($520) Initiate shipboard T&E on the computer-based Damage Control System (DCS) to assess performance under realistic shipboard conditions. DCS incorporates the functional capabilities of ISMS plus mobility status, actuator control, and combat system diagrams. Install DCS on board USS ANZIO (CG 68) and prepare for fleet evaluation during damage control exercises. Install DCS on board ex-USS SHADWELL in preparation for total ship evaluations under P.E. 0603514N, Project S1565, Fire Protection/Damage Control Systems.
- (U) ($300) Prepare Navy Training Plan for DCS and install at the Surface Warfare Officer School (SWOS).
- (U) ($1,591) Conduct various tasks; including, conduct technical and logistic support assessments for existing damage control/firefighting equipment and systems, and update fleet technical documentation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

3. (U) FY 1996 PLAN:

- (U) ($700) Complete land and ship based RTDT system evaluations. Prepare preliminary performance specifications for ruggedized fire and smoke sensor system.
- (U) ($1,200) Complete development of doctrine for major machinery space fires. Conduct firefighting experiments based on fleet identified issues. Complete ex-USS SHADWELL upgrade.
- (U) ($362) Initiate DCS tactical guidance modules providing for on-screen call-up of key firefighting tactics and doctrine.
- (U) ($350) Initiate development of DCS man-machine interface enhancements to provide for rapid assimilation of data at Damage Control Central and the overall battle organization. Enhancements include development of specific screen displays based on the responsibilities of each group (e.g., Repair Lockers, Engineering, and Combat Systems) within the battle organization.
- (U) ($590) Initiate integration of casualty decision aides for real-time stability assessments, structural hull girder analysis, and vital systems reconfiguration into DCS.
- (U) ($400) Prepare training package for DCS including detailed SWOS course curriculum and shipboard embedded training package.
- (U) ($300) Complete fleet evaluation of DCS on board the USS ANZIO.

4. (U) FY 1997 PLAN:

- (U) ($700) Procure ruggedized RTDT system. Begin land based and shipboard Test & Evaluation (T&E).
- (U) ($900) Continue firefighting experiments onboard ex-USS SHADWELL in support of developing improved tactics and doctrine based on fleet identified issues.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

- (U) ($333) Complete DCS tactical guidance modules providing for on-screen call-up of key firefighting tactics and doctrine.
- (U) ($450) Continue man-machine interface enhancements to DCS.
- (U) ($600) Initiate development of DCS communication modules and procedures which allow for inter-ship and ship-to-shore communications.
- (U) ($484) Continue integration of casualty decision aides for real-time stability assessments, structural hull girder analysis, and vital system reconfiguration into DCS.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,078	4,483	XXX	XXX
(U) FY 1995 Appropriated:	XXX	4,483	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-226	-32	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:(PRESBUDG CONTROLS)	3,852	4,451	3,902	3,467

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94: End-of-Year Execution Update.
FY 95: Various reductions, including University Research, Travel, and 1995 SBIR.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

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

FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY2000 ESTIMATE	FY2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 091000 (Firefighting Equipment)									
14,665	625	6,264	1,750	2,425	2,280	2,686	2,740	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603514N, Project S1565 (Damage Control/Firefighting Systems)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Engineering Milestones	4Q Quick Acting Watertight Door Standard Drawings				
	4Q ISMS Software Documentation and Configuration Management Plan	4Q DCS Navy Training Plan/SWOS Installation	4Q DCS Training Package	4Q DCS Tactical Firefighting Guidance Module/ Man-machine Interface Enhancements	Continued

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

D. (U) SCHEDULE PROFILE: (Cont.)

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
		2Q RTDT Sensor System Requirements	4Q RTDT Performance Specification	4Q Ruggedized RTDT Prototype	Continued
T&E Milestones	4Q Multi-Compartment Integrated Firefighting Tactics and Doctrine Tests	4Q Major Machinery Space Integrated Firefighting Tactics and Doctrine Tests	4Q Fleet Identified Firefighting Issues Tactics and Doctrine Tests	4Q Fleet Identified Firefighting Issues Tactics and Doctrine Tests	Continued
	3Q ISMS Land-based and Shipboard Multi-Station Evaluation	4Q DCS Fleet Evaluation	4Q DCS Fleet Evaluation		

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

D. (U) SCHEDULE PROFILE: (Cont.)

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
			4Q Commercial RTDT System Land-Based and Shipboard Evaluation	4Q Ruggedized RTDT Sensor System Land-based and Shipboard Tests	Continued
Contract Milestones	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Engineering Assessments/ Design Studies	0	1,191	100	0
b. Test and Evaluation	2,366	2,460	1,570	1,200
c. Specifications/Design Standard Preparation	112	760	900	0
d. Hardware Development	590	0	0	400
e. Software Development	734	0	1,302	1,837
f. Travel	50	40	30	30
Total	3,852	4,451	3,902	3,467

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAVSURFWARCEN WR Carderock Division Bethesda, MD		10/94	Cont.	Cont.		2,452	1,820	2,398	2,067	CONT.	CONT.
NRL Washington, DC						1,167	1,452	1,504	1,400	CONT.	CONT.
Miscellaneous Competitive	Various					233	1,179	0	0	CONT.	CONT.
Support and Management						0	0	0	0	CONT.	CONT.
Test and Evaluation						0	0	0	0	CONT.	CONT.

RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

GOVERNMENT FURNISHED PROPERTY Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development		3,852	4,451	3,902	3,467	CONT.	CONT.
Subtotal Support and Management		0	0	0	0	CONT.	CONT.
Subtotal Test and Evaluation		0	0	0	0	CONT.	CONT.
Total Project		3,852	4,451	3,902	3,467	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROVEMENTS

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
NTDS SOFTWARE IMPROV. U1604	11,359	13,321	15,859	10,524	11,873	9,737	8,683	3,969	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ACDS Block 1 program replaces the vintage Naval Tactical Data System (NTDS) operating systems and applications algorithms and implements advanced concepts for Tactical Data System upgrades for surface combatants in response to future threats, operational deficiencies and new and existing operational requirements. The increased emphasis on joint operations and littoral warfare has heightened the importance of ACDS Block 1's joint interoperability and increased track/range capabilities. The program's objective is to develop integrated, coherent ship's real time command support systems that will increase operational capabilities; promote standardization and introduce new shipboard tactical displays and support equipment; and provide integration between sensor/weapons systems which are organic to and outside the battle force. This program provides for significant Combat Direction System (CDS) improvements including implementation of the Joint Tactical Information Data System (JTIDS)/ Tactical Data Information Link (TADIL) J (LINK 16) message standard to support interoperability/joint operations with U.S. Navy/Army/Air Force/Marine and NATO forces; implementation of the Aegis Tactical Executive System (ATES); and integration and interface with the Command and Control Processor (C^2P), the Cooperative Engagement Capability (CEC), and Ship's Self Defense System (SSDS). This program will be an integral part of the LPD-17 and CVN-76 combat system, integrating battle management functions of all other sensor and weapon systems.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($7,686) Completed coding, development, and contractor test of the ACDS Block 1 Level 1 lead ship program.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT NUMBER: U1604 PROJECT TITLE: NTDS SOFTWARE IMPROV.

- (U) ($135) Completed test procedures for Level 1 Program Acceptance Test (PAT).
- (U) ($100) Conducted Test Readiness Review (TRR) for PAT.
- (U) ($1,488) Began PAT on Level 1 lead ship program.
- (U) ($30) Conducted Combat System Integration Test (CSIT) Readiness Review.
- (U) ($1,235) Conducted platform integration testing (DT IIA) on USS Constellation (11/93 -5/94).
- (U) ($685) Began system engineering and design efforts for the ACDS Block 1 Level 2 Follow Ship which includes the Cooperative Engagement Capability (CEC) integration and conduct a Software Requirements Review (SRR) on the Level 2 computer program.

2. (U) FY 1995 PLAN:

- (U) ($4,494) Complete PAT and begin CSIT (DT IIB) on the Level 1 lead ship computer program.
- (U) ($390) Begin plans and procedures for TECHEVAL and OPEVAL.
- (U) ($835) Perform at-sea testing and demonstrations on USS CONSTELLATION (1/95 - 6/95).
- (U) ($1,681) Begin Lead ship installation preparations and develop training for crew.
- (U) ($200) Conduct a Preliminary Design Review (PDR) and a Critical Design Review (CDR) on the Level 3 computer program.
- (U) ($5,721) Begin coding and modification of existing code for the new Level 2 (CEC variant) functionalities.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT NUMBER: U1604 PROJECT TITLE: NTDS SOFTWARE IMPROV.

3. (U) FY 1996 PLAN:

- (U) ($2,500) Complete CSIT and correct priority Trouble Reports (TRs) to the Level 1 computer program.
- (U) ($1,927) Conduct System Integration Testing (SIT) of Level 1 on the lead ship.
- (U) ($1,000) Complete curriculum and conduct training of the system to the lead ship crew.
- (U) ($2,675) Begin TECHEVAL and OPEVAL testing of the Level 1 computer program aboard CV64.
- (U) ($6,557) Conduct and complete CSIT of Level 2 making code modification to the program.
- (U) ($1,200) Complete LHD-1 and CVN-69 installation preparations and participate in the Cooperative Engagement Capability (CEC) fleet introduction.

4. (U) FY 1997 PLAN:

- (U) ($3,500) Complete TECHEVAL and OPEVAL making required changes to the Level 1 program.
- (U) ($325) Prepare for ASN(RDA) Formal Review to achieve Milestone III.
- (U) ($6,699) Complete Level 3 system engineering, computer program code modification, test procedures and plans, and begin PAT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT NUMBER: U1604 PROJECT TITLE: NTDS SOFTWARE IMPROV.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	11,359	13,658	XXX	XXX
(U) FY 1995 Appropriated:	XXX	13,658	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	0	-337	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	11,359	13,321	15,859	10,524

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 funding changes reflect undistributed Congressional reductions for University Research (-22), Consulting Services (-104), travel (-19), and Small Business Innovative Research reduction (-192).

(U) Schedule: Consolidated the ACDS Block I Level 3 and 4 effort into a single level, Level 3.

(U) Technical: Not Applicable

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) O&MN	0708017N/486N/46N80 Ship System tactical Software									
	250	2,200	2,532	5,368	7,190	7,577	7,956	8,995	CONT	CONT
(U) SCN	PMS 312	CVN-76								
	0	3,300	0	0	0	0	0	0	3,300	3,300

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV.
PROJECT NUMBER: U1604
PROJECT TITLE: NTDS SOFTWARE IMPROV.

(U) RELATED RDT&E:

(U) PE 0603717N (Command and Control Processor (C2P))
(U) PE 0205604N (Navy JTIDS)
(U) PE 0603755N (Cooperative Engagement Capability (CEC))
(U) PE 0205604N (Tactical Data Links)
(U) PE 0604231N (Navy Tactical Combat System - Afloat (NTCS-A))
(U) PE 0603755N (Ship Self Defense System (SSDS))

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones			2Q L1 FIS CV/CVNs	4Q MS III 2Q FIS LHDs	CONT
Engineering Milestones	3Q L1 TRR 4Q L2 SRR	1Q L2 PDR 1Q L2 CDR	1Q L3 SRR 2Q L3 PDR 3Q L3 CDR		CONT
T&E Milestones	2Q CV64 DEMO 4Q L1 PAT	2Q 1 CSIT (DT IIB) 4Q L2 PAT	2Q L1 SIT 3Q L1 DT/OT 1Q L2 CSIT 4Q L2 SIT	3Q L3 PAT	CONT
Contract Milestones	3Q DEVELOPMENT CONTRACT AWARD	2Q IV&V CONTRACT AWARD	2Q DEV/LCM CONTRACT AWARD		CONT

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Software Development & Software Integration	7,367	6,915	10,396	6,209
b. TDA, Training, & System Engineering	1,868	2,476	2,163	1,250
c. Operating System Tech Support	75	75	150	150
d. Integrated Logistics Support	150	120	150	120
e. Risk Assessment	21	20	0	0
f. Configuration Mgmt	100	150	150	150
g. IV&V Agent/Test Support	827	2,399	830	700
h. DT/OT Efforts	250	475	775	765
i. Test Facilities	550	466	800	800
j. Engineering Support	100	165	135	110
k. Travel	51	60	50	60
l. Miscellaneous	0	0	260	210
Total	11,359	13,321	15,859	10,524

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT NUMBER: U1604 PROJECT TITLE: NTDS SOFTWARE IMPROV.

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
PRODUCT DEVELOPMENT											
Hughes Aircraft Co. San Diego, CA	C/CPAF	5/84	106,521	106,521	103,326	3,195	0	0	0	0	106,521
Hughes Aircraft Co. San Diego, CA	SS/CPFF	5/94	14,217	14,217	0	1,345	3,938	7,032	1,421	481	14,217
TBD (Development/LCM)	C/CPFF	1/97	19,379	19,379	0	0	0	760	3,148	15,471	19,379
NCCOSC RDTE Division San Diego, CA	WR	10/94	54,946	54,946	26,929	4,537	5,453	5,027	3,100	9,900	54,946
Miscellaneous Contractors	C/CPFF	VAR			2,854	434	335	335	280	810	5,048
Miscellaneous Govt. Activities	WR	VAR			1,430	72	80	50	60	210	1,902
SUPPORT AND MANAGEMENT: Miscellaneous					0	8	0	0	0	0	8

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (CONTINUED)

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
TEST AND EVALUATION:											
MISC	VAR	VAR			2,814	250	475	775	765	1,900	6,979
QUESTECH CO. San Diego, CA	C/CPFF	3/90	16,962	16,962	9,616	827	2,499	930	800	2,290	16,962
GOVERNMENT FURNISHED PROPERTY											

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
PRODUCT DEVELOPMENT										
Miscellaneous		VAR		8,715	691	541	950	950	3,200	15,047

SUPPORT AND MANAGEMENT
Not Applicable

TEST AND EVALUATION
Not Applicable

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	143,254	10,274	10,347	14,154	8,959	30,072	217,060
Subtotal Support and Management	0	8	0	0	0	0	8
Subtotal Test and Evaluation	12,430	1,077	2,974	1,705	1,565	4,190	23,941
Total Project	155,684	11,359	13,321	15,859	10,524	34,262	241,009

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604524N
PROGRAM ELEMENT TITLE: Submarine Combat System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1941 AN/BSY-2	84,547	84,681	43,302	16,461	12,732	9,627	0	0	0	1,792,133

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chief of Naval Operations established the SSN 21 SEAWOLF and the AN/BSY-2 Combat System Top Level Requirements in June 1986. The development objectives for AN/BSY-2 are: Meet the SEAWOLF combat system related TLR; develop an architecture which facilitates tactical improvements and future growth; and provide computer processes that improve response time from initial threat detection to weapon launch. AN/BSY-2 will provide new acoustic arrays which have improved self-noise characteristics and improved detection performance. It will provide computer aids to assist the operator in sensor, contact and weapon management, and will support employment of the most advanced submarine weapons from eight torpedo tubes. Software is now being developed for two incremental deliveries. The SDCT-1 delivery for initial sea-trials has almost completed certification. The SDCT-2 final delivery will complete in early 1996 and be installed after ship delivery in late 1996. The system architecture has been partitioned to facilitate tactical improvements, future growth, and high availability.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($7,481) Completed delivery of AN/BQG-5 to SSN 710.
- (U) ($50,000) Initiated System Design Certification Test (SDCT-I).
- (U) ($27,066) Completed AN/BQG-5 SDCT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

2. (U) FY 1995 PLAN:

- (U) ($50,000) Complete SDCT 1 integration.
- (U) ($25,000) Complete AN/BSY-2 SDCT 1.
- (U) ($ 9,681) Deliver AN/BSY-2 system to SSN 21.

3. (U) FY 1996 PLAN:

- (U) ($8,000) Complete SDCT 2 integration.
- (U) ($10,000) Complete AN/BSY-2 SDCT 2.
- (U) ($13,000) Complete Combat System Installation Certification (CSIC).
- (U) ($6,151) Deliver AN/BSY-2 to SSN 22.
- (U) ($6,151) Deliver AN/BSY-2 system to SSN 23 (in FYDP FY96).

4. (U) FY 1997 PLAN:

- (U) ($4,000) Complete Weapon System Accuracy Trials (WSAT).
- (U) ($4,000) Initiate CSIC II.
- (U) ($4,000) Initiate WSAT II.
- (U) ($4,461) Initiate Post Shakedown Availability (PSA).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT NUMBER: F1941 PROJECT TITLE: AN/BSY-2

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	84,547	89,726	xxx	xxx
(U) FY 1995 Appropriated:	xxx	89,726	xxx	xxx
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-5,045	xxx	xxx
(U) FY 1996/97 PRESBUDG Submit:	84,547	84,681	43,302	16,461

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The total FY 1995 funding reduction in the amount of $5,045K is a result of Congressional Undistributed reductions for Contract Support Services, University Research, FFRDC and travel in the amount of $3,722K and a Small Business Innovative Research assessment in the amount of $1,323K.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0205632N (Mk 48 ADCAP)
(U) PE 0204229N (TOMAHAWK & TMPC)
(U) PE 0604601N (Mine Development)
(U) PE 0604503N (Submarine System Equipment Development)
(U) PE 0604507N (Enhanced Modular Signal Processor)
(U) PE 0604707N (SEW Architecture/Engineering Support)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones		1Q Complete SDCT 1 Integration	1Q Complete SDCT 2 Integration		
T&E Milestones	2Q Completed AN/BQG-5 SDCT	1Q Complete AN/BSY-2 SDCT 1	1Q/97 Complete AN/BSY-2 SDCT 2 3Q Complete CSIC	2Q/98 Complete WSAT	CSIC II 2Q/98 Complete WSAT II 2Q/98 Complete PSA 2Q/99 Complete Development Testing DT-II 4Q/99 Complete Operational Testing OT-II
Contract Milestones	1Q Delivered AN/BQG-5 to SSN 710	2Q Deliver AN/BSY-2 to SSN 21	2Q Deliver AN/BSY-2 to SSN 22 3Q Deliver AN/BSY-2 to SSN 23 (in FYDP FY96)		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT NUMBER: F1941 PROJECT TITLE: AN/BSY-2

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Full Scale Development	49,470	58,016	22,615	501
b. Technical Direction Agent / In-Service Engineering Agent	23,531	17,868	14,642	12,370
c. Naval Surface Warfare Center	1,745	1,272	700	0
d. Program Assessment	1,500	1,300	0	0
e. Other In-House	1,832	332	445	500
f. Contractor Support Services / Management Support Services	5,921	5,393	4,500	2,690
g. Travel	548	500	400	400
Total	84,547	84,681	43,302	16,461

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
MMC, Syracuse NY	C/FPI	12/87	1,214,878	1,214,878	1,081,024	49,470	58,016	22,615	501	3,252	1,214,878
Raytheon, Portsmouth RI	C/FPI	2/91	22,318	22,318	22,318	0	0	0	0	0	22,318
AT&T, Greensboro NC			39,912	39,912	39,912	0	0	0	0	0	39,912
IBM, Manassas VA	FFP	3/86	16,800	16,800	16,800	0	0	0	0	0	16,800
NUWC, Newport RI	WR	11/94	301,630	301,630	242,448	18,312	13,192	10,482	8,946	8,250	301,630
NSWC, Crane IN	WR	11/94	16,445	16,445	12,728	1,745	1,272	700	0	0	16,445
NTSC, Orlando FL			5,257	5,257	5,257	0	0	0	0	0	5,257
Miscellaneous	Various	Various			30,803	2,380	832	845	900	1,300	37,060

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
EG&G, Rockville MD	C/CPAF	10/87	78,654	78,654	60,150	5,921	5,393	4,500	2,690	0	78,654
NUWC, Newport RI	WR/RC	11/94	39,825	39,825	22,169	5,219	4,176	3,160	2,424	2,677	39,825
MITRE, McLean VA	MIPR	11/94	6,738	6,738	3,938	1,500	1,300	0	0	0	6,738
Test and Evaluation			0	0	0	0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Miscellaneous	Various	Various	Various	3,236	0	0	0	0	0	3,236
Support and Management				0	0	0	0	0	0	0
Test and Evaluation										
Miscellaneous	Various	Various	Various	0	0	500	1,000	1,000	6,880	9,380

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604524N
PROGRAM ELEMENT TITLE: Submarine Combat System
PROJECT NUMBER: F1941
PROJECT TITLE: AN/BSY-2

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	1,454,526	71,907	73,312	34,642	10,347	12,802	1,657,536
Subtotal Support and Management	86,257	12,640	10,869	7,660	5,114	2,677	125,217
Subtotal Test and Evaluation	-	-	500	1,000	1,000	6,880	9,380
Total Project	1,540,783	84,547	84,681	43,302	16,461	22,359	1,792,133

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1947	New Design SSN HM&E									
	139,581	135,346	237,859	297,970	244,762	154,257	128,297	131,523	399,209	1,868,804
F1950	New Design SSN Combat System Development									
	72,877	93,493	109,556	117,047	118,884	60,975	62,615	69,571	221,570	926,588
TOTAL	212,458	228,839	347,415	415,017	363,646	215,232	190,912	201,094	620,779	2,795,392

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A principal challenge to the U.S. Navy is to maintain the submarine fleet essential to defend American interests. The New Attack Submarine (New SSN) is being designed to meet the potential threats of the next century in a multi-mission capable submarine that has the ability to provide covert, sustained presence in denied waters. The primary goal of the program will be to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and examining cost reduction, producibility improvement, and technical risk reduction. This Program Element (PE) provides the technology, prototype components, and systems to design and construct the New SSN and build in its Command, Control, Communications, and Intelligence (C^3I) System. This PE directly supports the following New SSN missions: (1) covert strike warfare; (2) anti-submarine warfare (3) covert intelligence collection/surveillance, indication and warning, and electronic warfare; (4) anti-surface ship warfare; (5) special warfare; (6) mine warfare; and (7) battle group support.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1947 New Design SSN HM&E	139,581	135,346	237,859	297,970	244,762	154,257	128,297	131,523	399,209	1,868,804

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses all the Hull, Mechanical and Electrical (HM&E) development efforts for the New SSN. The traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process called Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of government, shipbuilder and suppliers. This process is essential to achieve the maximum cost reduction possible in a low rate production environment. The thrust of these efforts will be to develop and apply HM&E system technologies which enable design of an attack submarine system. This approach to technology innovation will carefully balance military capability, development and acquisition cost, impact on ship weight and volume, and technical risk. Leveraging and capitalizing on existing technologies and vendor bases for existing components from SSN 688I, TRIDENT, and SEAWOLF will minimize both cost and risk. Varying degrees of re-engineering of existing systems may be required to adapt them to the new submarine's requirements and minimize vendor risks of constructing a new ship with overlapping technology development. Newly developing technologies will be transitioned from ongoing industry and government research and development programs where doing so will offer substantial affordability payoffs, without sacrificing military capability. HM&E development will support a FY 1998 lead ship construction contract award.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($76,198) Initiated system verification testing and analysis to support pressure hull structure confirmation

models, hydrodynamic modeling, and acoustic signature modeling and predictions. Initiated development of specifications for technologies such as high speed diesel, secondary propulsion motor, modular masts and electric power distribution components. Initiated studies to apply electromagnetic signature reduction to the New SSN. Continued transition from advanced development technologies and components such as ship control station, main propulsion unit, gas management system, hydraulic actuators, trim and drain pump, and the weapon stowage, handling, and launcher systems to support Milestone I decision.

- (U) ($12,099) Initiated development of an IPPD plan, with emphasis on cost-reduction. Executed process improvements, including early vendor involvement in specifications, build strategy, concurrent engineering, and commonality of parts. Performed cost-based review of ship and design/construction process to integrate new and previously identified improvements. Continued initiatives to simplify system design and component design for affordability. Reviewed data base of cost-reduction ideas for continuing incorporation into the process. Initiated Environmental Compliance and Pollution Prevention efforts.

- (U) ($10,050) Supported the design process with supportability trade-off analysis. Provided program and special studies support at Navy Labs, shipyards and in-house.

- (U) ($41,234) Implemented the IPPD concurrent engineering development of the New SSN through design/build teams at the shipbuilder for all non-propulsion efforts. Established and staffed concurrent engineering project management teams and developed a comprehensive design and construction data base to provide information for arrangement and installation drawings, material ordering data, manufacturing plans, and integrated construction schedules. Established and maintained an electronic mock-up of the forward ship areas.

2. (U) FY 1995 PLAN:

- (U) ($111,714) Continue system verification studies, tests and analysis in support of ship design. Continue development of components and technologies such as high speed diesel, secondary propulsion motor, modular masts and electric power distribution components. Continue development of components and technologies such as electromagnetic signature reduction, ship control station, gas management system, and main propulsion unit. Initiate transition of technologies such as propulsor, ship service turbine generator, reverse osmosis desalination, and main shaft seal from Advanced Development to support Milestone II decision. Conduct Cost and Operational Effectiveness Analysis (COEA), and Early Operational Assessment (EOA) of New SSN platform and report findings. Prepare test plans associated with Developmental Testing. Award Level of Effort (LOE) and Improved Performance Machinery Program (IPMP) contracts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

- (U) ($9,745) Prepare refined ship cost estimate. Continue projects which improve producibility and reduce procurement and life cycle costs. Continue Environmental Compliance and Pollution Efforts.

- (U) ($13,887) Continue to support the design process with supportability trade-off analysis. Continue to provide program and special support at Navy Labs, shipyards and in-house.

3. (U) FY 1996 PLAN:

- (U) ($202,162) Continue design and manufacturing of prototype technologies and components such as: high speed diesel, main propulsion unit, ship service turbine generator, weapons launch systems, propulsion shaft, thrust bearing, electric power distribution components, electromagnetic signature reduction, air conditioning and refrigeration units, gas management system, and ship control station. Complete at-sea evaluation of reverse osmosis desalination. Validate design and production processes for modular integrated decks with detailed finite element models and small scale testing of constituent items. Initiate design of prototype propulsor for Large Scale Vehicle (LSV) evaluation. Continue system verification studies, tests, and analyses in support of ship design.

- (U) ($11,691) Conduct analysis in support of force effectiveness assessment and component performance trade-offs. Develop and maintain cost reducing approach to New SSN construction through use of IPPD's concurrent engineering and design/build philosophy. Conduct coordination of New SSN specifications at the shipbuilder. Provide cost estimating and validation of cost reduction ideas for New SSN overall design development. Continue Environmental Compliance and Pollution Prevention efforts.

- (U) ($24,006) Development of a New SSN logistic support concept, Reliability, Maintainability, and Availability (RM&A) modeling analyses of New SSN systems, concept definition and development of an Onboard Team Trainer, development of HM&E trainers, operating and support (O & S) cost research, and prototyping of an Integrated Weapons System Data Base (IWSDB) environment that supports the Joint Continuous Acquisition Life Cycle Support (JCALS) concepts, evolving toward a "paperless ship".

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1947 PROJECT TITLE: New Design SSN HM&E

4. (U) FY 1997 PLAN:

- (U) ($253,718) Initiate fabrication of prototype forward deck modules and continue development evaluation of components on integrated deck modules. Continue design and manufacturing of prototype technologies and components such as: main propulsion unit, ship service turbine generator, weapons launch systems, propulsion shaft, thrust bearing, electromagnetic signature reduction, gas management system, and ship control station. Complete fabrication of prototype reverse osmosis desalination unit. Complete design and initiate testing of scaled prototype propulsor on LSV. Complete prototype testing of high speed diesel. Initiate shock qualification testing of various components. Continue system verification studies, tests, and analyses in support of ship design.

- (U) ($12,523) Continue effectiveness analyses and evaluations relating to force effectiveness. Conduct analysis in support of force effectiveness assessment and component performance tradeoffs. Maintain cost reducing approach to New SSN construction through use of IPPD's concurrent engineering and design/build philosophy. Continue coordination of New SSN specification at the shipbuilder. Continue cost estimating and validation of cost reduction ideas for New SSN overall design development. Continue Environmental Compliance and Pollution Prevention efforts.

- (U) ($24,584) Continue development of a New SSN logistic support concept through trade-off studies and analyses, RM&A modeling analyses of New SSN systems, concept definition and development of an Onboard Team Trainer, development of HM&E trainers, O & S cost research, and prototyping of an IWSDB environment that supports the JCALS concepts. Prepare test plans associated with Developmental Testing.

- (U) ($7,145) Extension of Digital Data Exchange of all data between the Navy and shipbuilder. Provide program and support at Navy Labs, shipyards and in-house. Conduct feasibility studies and engineering evaluation of potential expanded mission capability and address the feasibility of incorporating late emergent technologies into later hulls of the New SSN. Conduct engineering review and analysis of shipyard and vendor proposed technology initiatives.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget	155,581	138,888	XXX	XXX
(U) FY 1995 Appropriated:	XXX	138,888	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-16,000	-3,542	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	139,581	135,346	237,859	297,970

(U) CHANGE SUMMARY EXPLANATION: -

(U) Funding: FY 1994 decrease is attributable to an execution realignment. FY 1995 change is attributable to undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands)

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 201300	0	0	704,498	299,758	2,879,317	578,899	1,828,844	1,058,521	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

PROJECT NUMBER: F1947
PROJECT TITLE: New Design SSN HM&E

(U) RELATED RDT&E:

(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q NEW SSN MS I	3Q NEW SSN MS II			1Q/08 NSSN MS III 2Q/98 LEAD SHIP CONSTRUCTION
Engineering Milestones					
T&E Milestones		1Q/95 DT-I 1Q/95 OT-I(EOA)	1Q/96 DT-IIA	2Q/97 OT-IIA	3Q/00 DT-IIB 2Q/04 DT-IIC 1Q/06 DT-IIE 2Q/06 DT-IIF (TECHEVAL) 1Q/01 OT-IIB 3Q/04 OT-IIC (IOT&E) 1Q/07 OT-IID (OPEVAL) 1Q/05 DT-IID (LIVE FIRE TEST)
Contract Milestones		2Q/95 IPMP 2Q/95 LOE			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

A. (U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Computer Aided Design Efforts	670	0	0	0
b. Design/Management Support	799	0	0	3,065
c. Modules/Tech Upgrade Studies	0	0	0	0
d. General Piping	0	0	0	350
e. Weapons Safety	0	0	0	0
f. On-Site Design Support	0	0	0	3,730
g. Navy Labs	0	0	0	0
h. Ship System Development	39,765	0	0	0
i. Military Effectiveness/ Operational Analysis	2,800	1,600	1,700	2,200
j. Subsafe	215	225	278	400
k. Producibility/Environmental	7,194	5,485	6,671	6,073
l. Specification/ Construction Support	800	1,000	2,000	3,000

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1947 PROJECT TITLE: New Design SSN HM&E

A. (U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
m. Cost Analysis	1,090	1,435	1,042	850
n. Design Integration	8,622	5,096	26,624	37,551
o. Signature Reduction/Analysis	18,278	17,660	20,820	19,751
p. Transient Analysis	3,305	2,632	7,563	13,965
q. Structural Engineering R&D	6,580	12,548	9,300	12,680
r. Main Propulsion Unit Development	620	8,866	51,501	48,324
s. Propulsion System Engineering Development	3,178	9,473	21,396	26,735
t. Electrical System Engineering Development	7,567	15,713	12,275	38,772
u. Auxiliary System Engineering Development	15,034	15,588	15,493	16,860
v. Materials/Coatings Engineering R&D	1,560	6,498	13,325	18,520
w. Weapons Launcher System Engineering R&D	11,454	17,640	23,865	20,560

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

A. (U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
x. Logistics	3,939	6,261	14,043	18,608
y. General Support	1,830	1,960	3,600	1,565
z. Test Support	1,043	1,809	1,438	1,445
aa. Program Support	3,238	3,857	4,925	2,966
Total	139,581	135,346	237,859	297,970

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1947 PROJECT TITLE: New Design SSN HM&E

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in Thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NSWC Carderock, MD	WR	VARIOUS	326,542	326,542	0	32,948	28,821	53,901	57,693	153,179	326,542
Advanced	SS/CPFF	1/94	1,400	1,400	0	1,170	230	0	0	0	1,400
Marine Enterprises, Arlington, VA											
General	SS/CPFF	10/93	72,121	72,121	0	72,121	0	0	0	0	72,121
Dynamics/EB Div, Groton, CT											
GD/EB Div.,	SS/CPFF	1/95	154,932	154,932	0	0	9,727	57,236	66,385	21,584	154,932
Groton, CT											
SUPSHIP,	PD	VARIOUS	9,395	9,395	0	800	2,750	1,894	1,951	2,000	9,395
Groton, CT											
SPCC	RC	VARIOUS	1,321	1,321	0	1,321	0	0	0	0	1,321
Mechanicsburg, PA											
GD/EB Div.,	SS/CPFF	1/95	139,799	139,799	0	0	28,277	32,130	24,992	54,400	139,799
Groton, CT											
GD/EB Div.,	SS/CPAF	5/95	22,027	22,027	0	0	4,757	6,939	4,001	6,330	22,027
Groton, CT											
MISCELLANEOUS	VARIOUS	VARIOUS	1,008,604	1,008,604	0	5,865	39,299	69,746	122,214	771,480	1,008,604
Newport News	SS/CPFF	2/93	10,037	10,037	0	8,207	1,510	220	100	0	10,037
Shipbuilding, Norfolk, VA											
NUWC, Newport, RI	WR	VARIOUS	71,651	71,651	0	13,062	14,736	10,919	15,332	17,602	71,651
EG&G, Inc.,	SS/CPFF	1/94	1,064	1,064	0	754	310	0	0	0	1,064
Rockville, MD											

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
TBD	C/CPFF	TBD	18,175	18,175	0	0	0	2,084	2,573	13,518	18,175
MISCELLANEOUS	VARIOUS	VARIOUS	11,516	11,516	0	2,290	3,120	1,352	1,284	3,470	11,516
Test and Evaluation											
MISCELLANEOUS	VARIOUS	VARIOUS	20,220	20,220	0	1,043	1,809	1,438	1,445	14,485	20,220

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	136,248	130,417	232,985	292,668	1,026,575	1,818,893
Subtotal Support and Management	0	2,290	3,120	3,436	3,857	16,988	29,691
Subtotal Test and Evaluation	0	1,043	1,809	1,438	1,445	14,485	20,220
Total Project	0	139,581	135,346	237,859	297,970	1,058,048	1,868,804

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1950 New Design SSN Combat System Development	72,877	93,493	109,556	117,047	118,884	60,975	62,615	69,571	221,570	926,588

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses the top level systems development and overall integration of the New SSN C³I System (formerly referred to as Combat Systems), which includes multiple subsystems, into the ship. The traditional distinct phasing of the ship design process has been replaced with a continuous concurrent engineering process called Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder and suppliers. This process, which includes the C³I System efforts, is essential to achieve the maximum cost reduction possible in a low rate production environment. The scope of the system is expanded from Sonar and Combat Control subsystems to include Electronics Support Measures, Exterior Communications, Submarine Defensive Warfare System, Navigation, Total Ship Monitoring, Periscope/Imaging, Tactical Acoustic Communications, Radar, Navigation Sensor System Interface (NAVSSI), Interior Communications, Tactical Support Devices, Fiber Optic Backbone, and Special Purpose Subsystems, such as Battle Force Team Trainer and others. The Research, Development, Test and Evaluation funds identified encompass New SSN specific development efforts (not programmed in other program lines) and integration of these multiple subsystems at an Integration Test Site prior to ship delivery.

(U) New SSN plans to use an acquisition and implementation approach based on Open System, Commercial-Off-The-Shelf (COTS) Non-Developmental Items or subsystems; leveraging on-going subsystems developments; and developing new subsystems when needed to satisfy New SSN requirements. The recurring cost of future C³I Systems must be reduced to meet the program's affordability goals. Modifications to many subsystems must be developed to: (1) reduce the shipbuilding and construction recurring costs through the use of COTS components; (2) use proven computer technologies to evolve to an Open System design; (3) enhance capabilities to support expanded operational requirements, reduced manning, and reduced shipboard footprint.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

(U) To meet the combined threat, the submarine force must continue to operate as effectively in litteral regions as it traditionally has in open ocean. Close coordination with surface battle groups and airborne units is essential to mission accomplishment. To support the New SSN mission, the following functional capabilities are provided or supported by the New SSN C³I System: (1) Passive and Active detection of multiple contacts, including early warning threat determination through processing and analysis of sensor data; (2) classification of sensor data for the purpose of identifying contacts, (3) localization (tracking) of contacts through target motion analysis; (4) preset, launch, and control of weapons and countermeasures; (5) improved communication and connectivity with other battle group elements, airborne units, and special operations forces; (6) incorporation of Vertical Launch System to enhance strike warfare; and (7) more effective covert surveillance through video imaging with onboard digital enhancement capabilities and improved electronic warfare analysis and exploitation capabilities.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($19,479) Initiated top level system activities associated with C³I System requirements in the following areas: system level specifications development; interface control document preparation, and definition of the C³I System Integration effort. Conducted Phase 2 Open System Architecture Demonstrations.
- (U) ($42,743) Began development and transition for Combat Control and Sonar subsystems which includes: the transition to COTS hardware and software; the transition of sonar advanced development efforts; and development and integration of a Computer Open System Module to support Milestone I decision.
- (U) ($10,655) Started development efforts to support New SSN unique requirements for other subsystems such as Exterior Communications, Periscope/Imaging, and Navigation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

2. (U) FY 1995 PLAN:

- (U) ($28,643) Award Level of Effort (LOE) contract. Continue system level development activities in the following areas: complete system level specifications and interface control documents; develop hardware configuration definition and functional allocation Government Furnished Information packages; conduct PHASE I Critical Item Tests; begin preparation of test and integration plans for the Integration Test Site; and begin C^{3}I System Integration effort. Begin development of the Prime Item Development Specification (PIDS) for Simulation and Stimulation (SIM/STIM) equipment.

- (U) ($48,338) Combat Control and Sonar subsystems development will continue COTS hardware and software development and the development and integration of a Computer Open System Module. Conduct Cost Operational Effectiveness Analysis (COEA), and Early Operational Assessment (EOA) of New SSN platform and report findings.

- (U) ($16,512) Continue development efforts to support New SSN unique requirements for other subsystems. Begin Advanced Submarine Tactical Electronic Countermeasures System (ASTECS) Engineering and Manufacturing Development.

3. (U) FY 1996 PLAN:

- (U) ($17,489) System level development activities continue in the following areas: development of test and integration plans for the Integration Test Site; identification of unique hardware and software requirements associated with the Integration Test Site; complete development of the PIDS for SIM/STIM equipment.

- (U) ($61,884) Award Prime contract and initiate Combat Control and Sonar detailed hardware design, continue software transition and development, continue hardware development, and provide funding for test hardware.

- (U) ($30,183) Continue development efforts to support unique requirements for other subsystems. Complete ASTECS Preliminary Design Review.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development
PROJECT NUMBER: F1950
PROJECT TITLE: New Design SSN Combat System Development

4. (U) FY 1997 PLAN:

- (U) ($21,409) System level development activities continue in the following areas: development of test and integration plans for the Integration Test Site; begin procurement of unique hardware and develop or modify computer software in preparation for the testing and integration of New SSN C^{3}I System; start Integration Test Site development; begin development and procurement of hardware and software for SIM/STIM equipment.
- (U) ($65,842) Complete Combat Control and Sonar detailed hardware design; continue software transition and development, continue hardware development, prepare for system integration and test, and provide funding for test hardware.
- (U) ($29,796) Continue development efforts to support unique requirements for other subsystems. Complete ASTECS Critical Design Review.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	80,877	127,267	XXX	XXX
(U) FY 1995 Appropriations:	XXX	97,267	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-8,000	-3,774	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	72,877	93,493	109,556	117,047

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The decrease in FY 1994 is attributable to End-of-Year Execution Adjustments. FY 1995 decrease reflects undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 201300	0	0	704,498	299,758	2,879,317	578,899	1,828,844	1,058,521	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603504N (Advanced Submarine Combat Systems Development)
(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603562N (Submarine Tactical Warfare Systems)
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604503N (Submarine System Equipment Development)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)
(U) PE 0604574N (Navy Tactical Computer Resources)
(U) PE 0604777N (Navigation/ID Systems)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q NEW SSN MS I	3Q NEW SSN MS II			1Q/08 NEW SSN MS III
Engineering Milestones					2Q/98 LEAD SHIP CONSTRUCTION
T&E Milestones		2Q/95 EOA			4Q/07 OPEVAL
Contract Milestones		2Q/95 LOE 3Q/95 IPPD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development
PROJECT NUMBER: F1950
PROJECT TITLE: New Design SSN Combat System Development

A. (U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. SONAR PROGRAM	35,287	34,098	41,710	44,091
b. COMBAT CONTROL PROGRAM	7,456	14,240	19,187	21,751
c. SYSTEM LEVEL	19,769	28,643	17,489	21,409
d. EXTERIOR COMMS	500	2,563	750	750
e. PERISCOPES/IMAGING	4,560	5,625	4,500	1,500
f. NAVIGATION	3,000	2,160	2,845	3,215
g. INTERIOR COMMS	125	250	475	475
h. NAVSSI	850	664	787	1,087
i. FIBER OPTIC BACKBONE	1,330	779	1,496	1,625
j. ASTECS	0	4,471	20,317	21,144
Total	72,877	93,493	109,556	117,047

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in Thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
UNISYS Corp., St. Paul, MN	SS/FFP	9/94	6,999	6,999	0	624	6,375	0	0	0	6,999
Digital Systems Resources, Fairfax, VA	SS/CPFF	3/94	10,655	10,655	0	10,655	0	0	0	0	10,655
Unisys Corp., St. Paul, MN	SS/FFP	4/94	2,500	2,500	0	1,500	1,000	0	0	0	2,500
Raytheon Co., Portsmouth, RI	SS/CPIF	2/94	7,797	7,797	0	2,500	4,310	987	0	0	7,797
Sperry Marine, Inc., Charlottsville, VA	SS/CPFF	12/93	2,162	2,162	0	1,316	846	0	0	0	2,162
GD/EB Div, Groton, CT	SS/CPFF	10/94	5,000	5,000	0	5,000	0	0	0	0	5,000
GD/EB Div, Groton, CT	SS/CPAF	1/95	110,320	110,320	0	0	8,092	9,409	13,943	78,876	110,320
Digital Systems Resources, Fairfax, VA	SS/CPFF	8/94	20,309	20,309	0	6,700	11,000	2,609	0	0	20,309

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
SPAWAR/ Applied Research Laboratory, Univ Texas	SS/CPFF	8/94	3,273	3,273	0	2,207	1,066	0	0	0	3,273
Loral, Manassas, VA	SS/CPFF	8/94	5,158	5,158	0	3,380	1,778	0	0	0	5,158
NUWC, Newport, RI	WR	VARIOUS	162,097	162,097	0	25,324	25,698	13,274	13,624	84,177	162,097
Newport News, VA	SS/CPFF	3/95	925	925	0	0	925	0	0	0	925
Kollmorgen Northampton, MA	SS/FFP	8/94	4,060	4,060	0	4,060	0	0	0	0	4,060
TBD	TBD	VARIOUS	372,246	372,246	0	0	14,132	58,255	64,804	235,055	372,246
Miscellaneous	VARIOUS	VARIOUS	86,114	86,114	0	5,972	12,699	12,008	13,146	42,289	86,114
Support and Management											
EG&G, Rockville, MD	SS/CPFF	6/94	1,500	1,500	0	1,500	0	0	0	0	1,500
EG&G, Rockville, MD	SS/CPFF	6/94	11,509	11,509	0	60	3,285	4,002	4,162	0	11,509
SWL, Inc., Vienna, VA	PD	10/94	5,200	5,200	0	0	600	600	1,100	2,900	5,200
MITRE Corp., McLean, VA	MIPR	12/94	4,847	4,847	0	0	247	600	1,100	2,900	4,847

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Offices EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
ASC Arlington, VA	SS/CPFF	3/94	2,515	2,515	0	950	665	500	400	0	2,515
Miscellaneous	C/CPIF	VARIOUS	67,552	67,552	0	1,129	493	1,424	1,251	63,255	67,552
Test and Evaluation											
MISCELLANEOUS	VARIOUS	VARIOUS	25,050	25,050	0	0	282	288	317	24,163	25,050

GOVERNMENT FURNISHED PROPERTY:

Item Description	Fund	Contract Method Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Raytheon Co. Portsmouth, RI	SS/CPIF/ CPAF		12/95	4/97	0	0	0	5,600	3,200	0	8,800

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development
PROJECT NUMBER: F1950
PROJECT TITLE: New Design SSN Combat System Development

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	69,238	87,921	102,142	108,717	440,397	808,415
Subtotal Support and Management	0	3,639	5,290	7,126	8,013	69,055	93,123
Subtotal Test and Evaluation	0	0	282	288	317	24,163	25,050
Total Project	0	72,877	93,493	109,556	117,047	533,615	926,588

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604561N
PROGRAM ELEMENT TITLE: SSN 21 Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1946 SSN 21 Development	73,742	65,161	83,503	97,805	34,463	25,860	0	0	0	1,632,821

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The SSN 21 Class multi-mission submarine will be quiet, fast, heavily armed, survivable, and capable of contending with the projected enemy threat well into the 21st century. The program provides the advanced technology, prototype components and systems to design and construct the SSN 21 and SSN 22, using cost effective modular construction initiatives and technical risk reduction initiatives. Significant technical advances in areas such as silencing, survivability, depth, speed, and combat system integration are also included.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS: The following information is intended to highlight major Research and Development (R&D) efforts and does not include all SEAWOLF R&D efforts.

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($44,019) Continued planning for Live Fire Test (LFT), shock qualification testing of SSN 21 components, tests utilizing the Large Scale Vehicle (LSV), electromagnetic silencing testing, and qualification testing of various SSN 21 components. Completed FSS-8 Shock Test Series. Big Pond Shock test facility at Aberdeen Proving Ground (APG) nearly complete. Prototype Propulsor complete, and delivered to the shipbuilder for installation.
- (U) ($16,610) Continued hardware/software interface testing of the Ship Control System (SCS), interface of the Data Distribution System (DDS), and system and component interface support during Off Hull Test and ship construction.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

- (U) ($8,212) Continued development of the Advanced Special Hull Treatment Mold In Place (ASHT MIP) installation technology, and ASHT (low volume) installation. ASHT at-sea test patch installed on SSN 762. Pre-delivery portion of lead ship installation in progress.

- (U) ($4,901) Continued Performance Trials preparations, including technical assessment of 155V DC power supply equipment and preparation for refurbishment following testing. Remaining prototypes delivered to the shipbuilder for installation.

2. (U) FY 1995 PLAN:

- (U) ($32,763) Continue planning for LFT, shock qualification testing of SSN 21 components, testing utilizing the LSV, qualification testing of various components of the SSN 21. Complete the APG shock test facility. Conduct A/B-1 shock test and commence overhaul of A/B-1 test vehicle. Commence FSS-8 shock vehicle overhaul. Prototype propulsor installed on lead ship.

- (U) ($14,831) Continue hardware/software interface testing of the SCS, interface of the DDS, and system and component interface support during ship construction.

- (U) ($6,626) Complete the pre-delivery portion of ASHT lead ship installation. Continue development, installation, and evaluation of ASHT MIP installation technology, ASHT at-sea test patches, and ASHT (low volume) installation to support lead ship PSA installation.

- (U) ($10,941) Continue Performance Trials preparations, including technical assessment of 155V DC power supply equipment in preparation for refurbishment.

3. (U) FY 1996 PLAN:

- (U) ($30,434) Commence and support acoustic, noise, and deep submergence trials planning and analyses.

- (U) ($24,799) Continue shock tests, overhaul test vehicles, support test facilities.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT NUMBER: F1946 PROJECT TITLE: SSN 21 Development

- (U) ($6,922) Continue development of ASHT MIP installation technology and at-sea test patches.
- (U) ($10,975) Complete integration of DDS, interface testing of the SCS, and system and component interface during ship construction.
- (U) ($10,373) Complete qualification and testing of various systems and components.

4. (U) FY 1997 PLAN:

- (U) ($49,892) Commence LFT, Big Pond shock tests, and underwater explosion instrumentation and post-test inspection.
- (U) ($11,524) Commence Post Shakedown Availability (PSA) installation of ASHT, system qualification and inspection.
- (U) ($36,389) Complete pre-PSA trials, i.e., acoustic trials, hydroacoustic trials, electromagnetic silencing trials, sonar certification, torpedo trials, and weapons certification prior to PSA. Support resolution of LFT testing deficiencies. Commence certifications during PSA.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	73,742	68,530	XXX	XXX
(U) FY 1995 Appropriated:	XXX	68,530	XXX	XXX
(U) Adjustments from PRESBUDG:	0	-3,369	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	73,742	65,161	83,503	97,805

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N
PROGRAM ELEMENT TITLE: SSN 21 Development
PROJECT NUMBER: F1946
PROJECT TITLE: SSN 21 Development

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustments in FY 1995 are the result of various Congressional Undistributed reductions in the amount of $2,694K and an Small Business Innovative Research assessment of $675K.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN #3	18,324	15,568	1,526,019	36,080	21,883	26,989	13,378	11,495	49,031	8,189,834
(U) MILCON P-398	0	0	0	0	0	0	0	0	0	27,300
(U) OPN	3,816	2,254	4,982	49,084	30,813	51,344	8,256	9,450	0	332,099

(U) RELATED RDT&E:

(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604524N (Submarine Combat Systems)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N
PROGRAM ELEMENT TITLE: SSN 21 Development
PROJECT NUMBER: F1946
PROJECT TITLE: SSN 21 Development

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones	2Q Prototype Propulsor Complete	1Q Prototype Propulsor Installed			
T&E Milestones			3Q DT-IIIA	3Q LFT	1Q/98 DT-IIIB 2Q/99 OT-III
Contract Milestones		2Q Award Conform Contracts			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT NUMBER: F1946 PROJECT TITLE: SSN 21 Development

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Submarine Silencing	4,413	3,446	4,332	8,214
b. Advanced Ship Control	15,892	14,831	10,975	18,451
c. Auxiliaries/Deep Components	1,132	496	0	0
d. Improved Performance Machinery Program	1,696	2,246	1,010	1,061
e. Shock	21,147	15,970	24,799	2,898
f. Propulsor	3,903	4,320	1,817	0
g. Target Strength Reduction	9,142	6,626	6,922	11,524
h. Weapons, Stowage & Handling	2,582	672	693	355
i. Advanced Submarine Technology	9,088	4,071	6,853	8,308
j. Test & Evaluation	4,747	12,483	26,102	46,994
Total	73,742	65,161	83,503	97,805

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
General Dynamics Groton CT	SS/CPFF	7/83	325,619	325,619	287,160	11,409	9,355	6,536	11,159	0	325,619
Newport News Shipbuilding Newport News VA	SS/CPFF	4/87	108,676	108,676	101,064	2,245	3,739	725	353	550	108,676
NSWC Carderock MD	WR/RC	Various	301,627	301,627	258,319	12,037	10,560	6,827	7,480	6,404	301,627
Philadelphia Naval Shipyard PA	WR	10/93	14,258	14,258	11,758	1,300	0	1,200	0	0	14,258
NUWC Newport RI	WR	Various	42,852	42,852	21,721	3,976	3,928	2,601	6,247	4,379	42,852
NUWC Newport RI	RC	Various	18,489	18,489	13,962	1,439	393	1,444	1,251	0	18,489
NAVSUP	PD	10/93	14,478	14,478	12,578	1,900	0	0	0	0	14,478
Miscellaneous	Various	Various	430,289	430,289	392,110	2,859	2,301	5,717	11,086	16,216	430,289

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
ELS											
Chantilly VA	C/CPAF	9/92	7,494	7,494	2,079	1,348	1,287	1,355	1,425	0	7,494
GCI											
Arlington VA	SS/CPFF	7/92	5,555	5,555	590	1,085	1,255	1,280	1,345	0	5,555
Miscellaneous	Various	Various	40,208	40,208	7,798	9,335	5,155	6,197	8,911	2,812	40,208
Test and Evaluation											
General Dynamics											
Groton CT	SS/CPFF	7/83	86,224	86,224	49,379	1,614	3,377	9,773	17,348	4,733	86,224
NSWC											
Carderock MD	WR	Various	113,009	113,009	35,200	6,134	9,240	26,040	26,513	9,882	113,009
Aberdeen Proving Ground											
MD	MP	10/93	36,286	36,286	26,930	4,600	1,480	2,976	300	0	36,286
Westinghouse											
Large PA	SS/CPFF	7/83	23,150	23,150	50	11,400	11,700	0	0	0	23,150
Miscellaneous	Various	Various	64,607	64,607	31,589	1,061	1,391	10,832	4,387	15,347	64,607

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N
PROGRAM ELEMENT TITLE: SSN 21 Development
PROJECT NUMBER: F1946
PROJECT TITLE: SSN 21 Development

GOVERNMENT FURNISHED PROPERTY Not applicable

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	1,098,672	37,165	30,276	25,050	37,576	27,549	1,256,288
Subtotal Support and Management	10,467	11,768	7,697	8,832	11,681	2,812	53,257
Subtotal Test and Evaluation	143,148	24,809	27,188	49,621	48,548	29,962	323,276
Total Project	1,252,287	73,742	65,161	83,503	97,805	60,323	1,632,821

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0236 SSN Combat System Improvement										
	33,846	24,330	38,479	32,070	40,570	41,321	39,293	38,972	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops software upgrades to integrate improved weapons capabilities within submarine Combat Control System (CCS) MK1, MK2, and AN/BSY-1 (Combat Control) and, as a part of the Obsolete Equipment Replacement, the program develops improvements to hardware which has become increasingly difficult and not economical to maintain. In FY 1994 and beyond, the thrust of the CCS Improvement program is the fleet introduction of CCS MK2 Program D0, AN/BSY-1 Engineering Change Proposal (ECP) 134 and Navy Tactical Command System-Afloat (NTCS-A), and the development of CCS MK2 Program D0 Blocks 1 and 2. ECP 134 provides Tomahawk Blocks 1 and 3 capabilities to AN/BSY-1 equipped submarines. NTCS-A provides battlegroup interoperability and Over-the-Horizon correlation algorithm updates to AN/BSY-1 and CCS MK1 equipped submarines. CCS MK2 converged multiple submarine combat system developments into a single effort to minimize submarine life cycle costs, i.e., SSN 688, SSN 688I and SSBN 726 Classes. CCS MK2 Program D0 provides a modular software architecture, introduces Tomahawk Block 3 and Harpoon Block 1C capabilities, introduces Advanced Capability (ADCAP) on TRIDENT, and replaces obsolete equipment. CCS MK2 Program D0 Block 1 integrates CCS MK2 into AN/BSY-1 systems, replaces additional obsolete equipment, provides updates to the World Vector Shoreline data base and incorporates a direct interface to the Global Positioning System, incorporates NTCS-A into CCS MK2, and implements Tomahawk Block 3 Phase III (Tomahawk Strike Planning System) and ADCAP torpedo improvements. Navigation Sensor System Interface (NAVSSI) provides real-time, accurate positional and velocity information for distribution to Combat Control and other shipboard subsystems. CCS MK2 Program D0 Block 2 incorporates anticipated upgrades to ADCAP, Tomahawk and Harpoon Submarine CCS.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($5,571) Completed Technical Evaluation (TECHEVAL)/Operational Evaluation (OPEVAL) for CCS MK2 Mods 0/1.
- (U) ($3,800) Completed OPEVAL and released CCS MK1 Program C4.2 Rev 1 to the fleet.
- (U) ($5,328) Conducted TECHEVAL/OPEVAL and released AN/BSY-1 ECP 134 to the fleet.
- (U) ($1,303) Completed System Design Certification Test (SDCT) for CCS MK2 Program D0 (ECP 6).
- (U) ($4,500) Obtained Milestone I/II approval and award contract for Ring Laser Gyroscope Navigation Program and procured Production Suitability Models.
- (U) ($4,500) Modified Non-Developmental Item design to meet Common Ring Laser Gyroscope specification and qualify.
- (U) ($3,025) Conducted Independent Software Nuclear Safety Analysis (ISNSA) for CCS MK2 Mod 0/1.
- (U) ($5,354) Obtained Milestone II approval for CCS MK2 Program D0 Block 1 A/B contract.
- (U) ($465) Certified NTCS-A for CCS MK1 and AN/BSY-1.

2. (U) FY 1995 PLAN:

- (U) ($500) Obtain Milestone III approval for CCS MK2 Mod 0/1.
- (U) ($21,418) Conduct Critical Design Review (CDR) and SDCT for CCS MK2 Program D0 Block 1 A/B.
- (U) ($2,412) Continue ISNSA for CCS MK2 Mod 0/1.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

3. (U) FY 1996 PLAN:

- (U) ($1,785) Complete Nuclear Certification of CCS MK2 Program D0.
- (U) ($18,481) Complete SDCT and Development Test (DT) for CCS MK2 Program D0 Block 1 A/B.
- (U) ($16,713) Obtain Milestone II and award contract for CCS MK2 Program D0 Block 1 C development.
- (U) ($1,500) Specify and begin development of NAVSSI for submarines.

4. (U) FY 1997 PLAN:

- (U) ($1,325) Complete Operational Test (OT) for CCS MK2 Program D0 Block 1 A/B.
- (U) ($27,621) Complete CDR for CCS MK2 Program D0 Block 1 C.
- (U) ($3,124) Commence land-based testing of NAVSSI submarine variant.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	33,681	25,261	XXX	XXX
(U) FY 1995 Appropriated:	XXX	25,261	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	+165	-931	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	33,846	24,330	38,479	32,070

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 funds increased by $165K due to an end-of-year execution update. FY95 funds decreased by $931K due to undistributed reductions.

(U) Schedule: Milestone III for CCS MK2 Program D0 deferred in accordance with ASN (RD&A) memorandum of 19 December 1994 to support additional CCS MK2 weapon capabilities. Block 1A/B engineering and program milestones slipped due to delay in contract award. Addition of CCS MK2 Program D0 Block 2 schedule.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 542000	14,374	19,499	12,917	29,245	41,713	45,161	52,193	53,714	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204229N (Tomahawk & TMPC)
(U) PE 0205632N (MK 48 ADCAP)
(U) PE 0603504N (Advanced Submarine Combat Systems Development)
(U) PE 0604503N (Submarine System Equipment Development)
(U) PE 0604707N (SEW Architecture/Engineering Support)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program					
Milestones					
D0 Block 1 A/B	3Q MS II				1Q/98 MS III
C4.2 Rev 1	2Q MS III				
MK2 Mod 0/1 (D0)		4Q MS III			
Common Ring Laser Gyroscope		1Q MS I/II			
AN/BSY-1 ECP 134	4Q MS III				
D0 Block 1 C			3Q MS II		3Q/00 MS III
D0 Block 2					2Q/99 MS II
Engineering					
Milestones					
D0 Block 1 A/B		3Q CDR	4Q SDCT		3Q/98 SDCT
D0 Block 1 C				4Q CDR	4Q/00 CDR
D0 Block 2					1Q/02 SDCT
T&E					
Milestones					
C4.2 Rev 1	1Q OT				
AN/BSY-1 ECP 134	2Q DT/3Q OT				
MK2 Mod 0/1 (D0)	4Q OT	2Q OT			
D0 Block 1 A/B				2Q DT/3Q OT	
D0 Block 1 C					1Q/99 DT/ 1Q/00 OT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Contract Milestones					
D0 Block 1 A/B	3Q Award				
D0 Block 1 C			3Q Award		
D0 Block 2					2Q/99 Award
Common Ring Laser Gyroscope		2Q Award			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System
PROJECT NUMBER: S0236
PROJECT TITLE: SSN Combat System Improvement

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary H/W Development	9,000	0	0	0
b. Software Development	7,260	11,617	12,621	20,439
c. Government Engineering Support/ Systems Engineering	9,296	7,275	10,904	7,169
d. Developmental Test and Evaluation	376	328	4,109	0
e. Operational Test and Evaluation	1,060	1,143	4,417	0
f. Independent Software Nuclear Safety Analysis	2,340	1,463	2,319	1,709
g. Program Management Support	3,207	2,106	2,328	963
h. Miscellaneous	1,307	398	1,781	1,790
Total	33,846	24,330	38,479	32,070

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System
PROJECT NUMBER: S0236
PROJECT TITLE: SSN Combat System Improvement

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Raytheon Portsmouth, RI	SS/FPI	Jun 94	19,135	19,135	0	7,260	11,617	258	0	0	19,135
TBD	C/FFP	Jan 95	9,000	9,000	0	9,000	0	0	0	0	9,000
TBD	C/CP	Apr 96	49,179	49,179	0	0	0	12,363	20,439	15,377	49,179
TBD	C/CP	Mar 99	33,288	33,288	0	0	0	0	0	33,288	33,288
NAVUNSEAWARCENDIV Newport, RI	WR	Oct 95	N/A	N/A		8,994	7,275	10,904	7,169	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System

PROJECT NUMBER: S0236
PROJECT TITLE: SSN Combat System Improvement

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development (Continued)											
PMA Cruise Missile Project Arlington, VA	PD	12/94	N/A	N/A	0	2,340	1,463	2,319	1,709	CONT.	CONT.
Miscellaneous					203,439	1,609	398	1,781	1,790	CONT.	CONT.
Support and Management											
EG&G Rockville, MD	C/CPFF	Jun 90	13,668	13,668	10,461	3,207	0	0	0	0	13,668
EG&G Rockville, MD	C/CPFF	Oct 94	5,397	5,397	0	0	2,106	2,328	963	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT NUMBER: S0236 PROJECT TITLE: SSN Combat System Improvement

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation											
PMA Cruise Missile Project Arlington, VA	PD	12/95	N/A	N/A	0	0	0	5,400	0	CONT.	CONT.
Miscellaneous					0	1,436	1,471	3,126	0	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System
PROJECT NUMBER: S0236
PROJECT TITLE: SSN Combat System Improvement

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	203,439	29,203	20,753	27,625	31,107	CONT.	CONT.
Subtotal Support and Management	10,461	3,207	2,106	2,328	963	CONT.	CONT.
Subtotal Test and Evaluation	0	1,436	1,471	8,526	0	CONT.	CONT.
Total Project	213,900	33,846	24,330	38,479	32,070	CONT.	CONT.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1803 Ship Contract Design	31,995	14,521	5,519	11,581	32,316	50,688	45,372	48,738	CONT.	CONT.
S2197 Ship Specifications	2,763	6,689	2,740	2,602	5,535	6,583	6,548	6,617	CONT.	CONT.
S2198 Live Fire Test and Evaluation	7,060	1,001	0	911	10,678	8,773	756	6,689	CONT.	CONT.
F2199 New Design SSN	0	133,579	9,735	0	0	0	0	0	0	143,314
TOTAL	41,818	155,790	17,994	15,094	48,529	66,044	52,676	62,044	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of all post Preliminary Design (through FY 1996) and all post Milestone (MS) I (FY 1997 and out) engineering, programmatic and acquisition documentation, including ship specifications and contractual documents, associated with the acquisition of Navy ships. Modern day ship design and acquisition processes do not separate Preliminary Design from Contract Design. These are seamless design actions and are both conducted between MS I and II. This line also supports the New Attack Submarine (New SSN) Contract Design.

(U) Contract Design is the engineering development of the technical and contractual definition of the ship design (including ship specifications and drawings) to a level of detail sufficient for prospective shipbuilders to make a sound estimate of the construction cost and schedule. Additionally, the contract design package developed under this PE provides the technical baseline from which the Navy selects the shipbuilder who then develops the detail design package required to support the construction and eventual delivery of the ship. This PE also supports the development of design methodologies which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions, and supports engineering planning and ship affordability studies.

(U) This PE also supports Live Fire Test and Evaluation (LFT&E) of new ship designs.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

(U) For the New SSN, the traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process called Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder and suppliers. This process is essential to achieve the maximum cost reduction possible in a low rate production environment. The general thrust of these efforts will be to translate the early IPPD design efforts for the New SSN into a well-defined set of specifications and drawings suitable for a Request for Proposal (RFP) package that supports development and construction of an effective nuclear attack submarine.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1803 Ship Contract Design	31,995	14,521	5,519	11,581	32,316	50,688	45,372	48,738	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports the development of all technical, programmatic, and contractual documentation required after Preliminary Design (through FY 1996) and after MS I (FY 1997 and out) for the acquisition of the ships in the Navy's Shipbuilding Program. The major effort is the engineering development of the technical and contractual definition of the ship design (e.g., ship specifications and drawings), with sufficient details for the prospective shipbuilder to make a sound estimate of construction cost and schedule. It also serves as the contractual technical definition from which the selected builder develops the shipbuilding detail design and testing package required to build and deliver the ship.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($10,500) Continued CVN 76 Contract Design.
- (U) ($19,400) Continued LPD 17 (L(X)) Contract Design.
- (U) ($ 989) Completed MCS(CONV) Contract Design.
- (U) ($ 846) Continued TAGOS 23 (TST).
- (U) ($ 260) Completed TAGS 63 Contract Design.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

2. (U) FY 1995 PLAN:

- (U) ($4,821) Complete CVN 76 Contract Design.
- (U) ($9,200) Continue LPD 17 Contract Design.
- (U) ($ 500) Complete TAGOS 23 (TST).

3. (U) FY 1996 PLAN:

- (U) ($5,519) Continue LPD 17 Contract Design.

4. (U) FY 1997 PLAN:

- (U) ($ 740) Commence AOE SLEP Contract Design.
- (U) ($7,391) Continue LPD 17 Contract Design.
- (U) ($ 400) Commence LHD MOD REPEAT Contract Design.
- (U) ($2,850) Commence ADC(X) Contract Design.
- (U) ($ 200) Commence TAGS 64 Contract Design.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	31,704	18,428	XXX	XXX
(U) FY 1995 Appropriated	XXX	18,428	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	+291	-3,907	XXX	XXX
(U) FY 1996/97 OSD/OMB Budget Submit:	31,995	14,521	5,519	11,581

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 94 increase of $291K is due to an end-of-year execution update. FY 95 changes reflect ship award date modifications in the SCN Plan and various Congressional reductions as follows: $277K for Small Business Innovative Research, $21K for travel, $152K for Consulting Services and $29K for university research.

(U) Schedule: The current SCN Plan is as follows:

TAGS 63, MCS(CONV)	FY 1994
CVN 76	FY 1995
LPD 17(L(X))	FY 1998
New Design SSN	FY 1998
TAGOS 25, AOE SLEP	FY 1999
TAGS 64	FY 1999
ADC(X)	FY 2000
LHD MOD REPEAT	FY 2001
CARRIER REPLACEMENT	FY 2002
SC 21	FY 2003
MCS(X), LHA/LH(X)	FY 2005

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

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

(U) RELATED RDT&E:

(U) PE 0603564N (Ship Preliminary Design/Feasibility Studies)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	See Individual Ship Acquisition Program Documentation.				
Engineering Milestones	See Individual Ship Acquisition Program Documentation.				
T&E Milestones	See Individual Ship Acquisition Program Documentation.				
Contract Milestones	See Individual Ship Acquisition Program Documentation.				

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT:0604567N
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E
PROJECT NUMBER:S1803
PROJECT TITLE:Ship Contract Design

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	30,891	13,900	5,219	11,081
b. Program Management Support	1,000	521	200	400
c. Travel	104	100	100	100
Total	31,995	14,521	5,519	11,581

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S1803
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Ship Contract Design

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
JJMA Arlington, Va.	C	2/88	Cont.	Cont.	1,401*	3,291	1,500	970	1,800	Cont.	Cont.
AME Arlington, Va.	C	2/88	Cont.	Cont.	3,633*	4,534	2,200	849	3,211	Cont.	Cont.
CD-NSWC Carderock,MD.	WR	A.N.**	Cont.	Cont.	4,515*	1,692	500	200	300	Cont.	Cont.
PNSY Phila,PA.	WR	A.N.**	Cont.	Cont.	6,480*	130	0	0	0	Cont.	Cont.
NAVAIR Arlington,VA.	WR	A.N.**	Cont.	Cont.	1,219*	1,466	700	300	500	Cont.	Cont.
NNS&DDCo Newport News,VA.	SS	Var.	12,745	12,745	3,087*	7,758	1,900	0	0	0	12,745
Misc.	Var.	Var.	Cont.	Cont.	14,765*	12,124	7,200	3,000	5,370	Cont.	Cont.
Support and Management											
Misc.	Var.	Var.	Cont.	Cont.	1,000*	1,000	521	200	400	Cont.	Cont.

Test and Evaluation - None.
* Amounts reflected are FY 93 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.
** As Needed.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT:0604567N
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E

PROJECT NUMBER: S1803
PROJECT TITLE: Ship Contract Design

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
None											
Support and Management											
None											
Test and Evaluation											
None											

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	35,100*	30,995	14,000	5,319	11,181	Cont.	Cont.
Subtotal Support and Management	1,000*	1,000	521	200	400	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	0	Cont.	Cont.
Total Project	36,100*	31,995	14,521	5,519	11,581	Cont.	Cont.

* Amounts reflected are FY 93 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.

BUDGET ACTIVITY: 5

RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN
PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

DATE: February 1995

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2197 Ship Specifications	2,763	6,689	2,740	2,602	5,535	6,583	6,548	6,617	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds development, improvement and update of NAVSEA cognizant acquisition specifications including Federal and Military Specifications, Handbooks and General Specifications for Ships of the U.S. Navy. NAVSEA is responsible for 4600 Military Specifications and Standards, 149 Federal Specifications and Standards, 3100 Standard/Type Drawings and Design Data Sheets, 362 Ship General Specification sections and 122 Non-Government Standards. These documents are required to reflect the latest technologies (i.e. fiber optics), manufacturing techniques, environmental requirements, hazardous material reduction, safety and legal/Congressional requirements. This project also funds the development and implementation of computer-aided design/computer-aided manufacturing (CAD/CAM) systems to improve the transition from the Navy's Contract Design to the shipbuilder's detail design and production. Additionally, this project funds the integration of the new fiber optic (FO) technology into the basic ship design process.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($ 600) Continued to update various outdated Federal/Military Specifications, Design Standards and Drawings. Continued to update portions of the General Specifications for Ships of the U.S. Navy. Continued development of Specification data base and Open Systems Architecture.
- (U) ($ 967) Commenced development of CAD II analysis programs and program integration. Continued development of CAD II ship design systems and modeling techniques for application on CVN 76 and LPD 17.
- (U) ($ 1,196) Continued development of FO Topology Systems. Continued development of optical cable and fiber connectors required specifications and standards, and optical waveguide measurements and standards. Integrated existing components and standards into LPD 17 and CVN 76 designs.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

2. (U) FY 1995 PLAN:

- (U) ($ 1,940) Continue to update various outdated Federal/Military Specifications, Design Standards and Drawings. Continue to update portions of the General Specifications for Ships of the U.S. Navy. Continue development of Specification data base and Open Systems Architecture.
- (U) ($ 3,664) Continue development of CAD II analysis programs and program integration. Continue development of CAD II ship design systems and modeling techniques for application on CVN 76, LPD 17, SC 21 and ADC(X).
- (U) ($ 1,085) Continue development of FO Topology Systems. Continue development of optical cable and fiber connectors required specifications and standards, and optical waveguide measurements and standards. Integrate existing components and standards into LPD 17 and CVN 76 designs.

3. (U) FY 1996 PLAN:

- (U) ($ 540) Continue to update various outdated Federal/Military Specifications, Design Standards and Drawings. Continue to update portions of the General Specifications for Ships of the U.S. Navy. Continue development of Specification data base and Open Systems Architecture.
- (U) ($ 2,200) Continue development of CAD II analysis programs and program integration. Continue development of CAD II ship design systems and modeling techniques for application on LPD 17, SC 21 and ADC(X).

4. (U) FY 1997 PLAN:

- (U) ($ 602) Continue to update various outdated Federal/Military Specifications, Design Standards and Drawings. Continue to update portions of the General Specifications for Ships of the U.S. Navy. Continue development of Specification data base and Open Systems Architecture.
- (U) ($ 2,000) Continue development of CAD II analysis programs and program integration. Continue development of CAD II ship design systems and modeling techniques for application on LPD 17, SC 21 and ADC(X).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,763	3,317	XXX	XXX
(U) FY 1995 Appropriated:	XXX	3,317	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	+3,372	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	2,763	6,689	2,740	2,602

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes reflect ship award date modifications in the SCN Plan.

(U) Schedule: The current SCN Plan is as follows:

TAGS 63, MCS(CONV)	FY 1994
CVN 76	FY 1995
LPD 17(L(X))	FY 1998
New Design SSN	FY 1998
TAGOS 25, AOE SLEP	FY 1999
TAGS 64	FY 1999
ADC(X)	FY 2000
LHD MOD REPEAT	FY 2001
CARRIER REPLACEMENT	FY 2002
SC 21	FY 2003
MCS(X), LHA/LH(X)	FY 2005

(U) Technical: Not applicable.

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

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

(U) RELATED RDT&E:

(U) PE 0603564N (Ship Preliminary Design/Feasibility Studies)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	See Individual Ship Acquisition Program Documentation.				
Engineering Milestones	See Individual Ship Acquisition Program Documentation.				
T&E Milestones	See Individual Ship Acquisition Program Documentation.				
Contract Milestones	See Individual Ship Acquisition Program Documentation.				

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Ship Specifications

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Systems Engineering	2,163	5,689	2,440	2,302
b. Software Development	600	1,000	300	300
Total	2,763	6,689	2,740	2,602

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE:Ship Specifications

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
SPCC Mechanicsburg,Pa.	WR	A.N.*	Cont.	Cont.	0	1,046	300	300	300	Cont.	Cont.
Misc.	Var.	A.N.*	Cont.	Cont.	0	1,717	6,389	2,440	2,302	Cont.	Cont.
Support and Management											
None											
Test and Evaluation											
None											

GOVERNMENT FURNISHED PROPERTY
None

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
None										
Support and Management										
None										
Test and Evaluation										
None										

* As Needed

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Ship Specifications

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	2,763	6,689	2,740	2,602	Cont.	Cont.
Subtotal Support and Management	0	0	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	0	Cont.	Cont.
Total Project	0	2,763	6,689	2,740	2,602	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2198 Live Fire Test & Evaluation	7,060	1,001	0	911	10,678	8,773	756	6,689	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project specifically responds to the Congressionally mandated Live Fire Test and Evaluation (LFT&E) legislation which requires realistic survivability testing be conducted under all major acquisition programs before production approval is granted. Evaluations concerning the vulnerability and lethality of ships against known threat systems will be conducted using analytical prediction techniques and model testing.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

   - (U) ($ 7,060) Commenced evaluation of LPD 17 design for HM&E and weapon system vulnerability. Commenced full scale surrogate underwater and air explosion testing.

2. (U) FY 1995 PLAN:

   - (U) ($ 1,001) Complete LPD 17 LFT&E testing and analysis.

3. (U) FY 1996 PLAN: No work planned.

4. (U) FY 1997 PLAN:

   - (U) ($ 911) Commence ADC(X) Live Fire Test and Evaluation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2198
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E PROJECT TITLE: Live Fire Test & Evaluation

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	7,060	1,025	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,025	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-24	XXX	XXX
(U) FY 1996/97 OSD/OMB Budget Submit:	7,060	1,001	0	911

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 reflects a $15K reduction for Small Business Innovative Research, and a decrease of $9K for undistributed Congressional reductions for university research, travel and consulting services.

(U) Schedule: The current SCN Plan is as follows:

TAGS 63, MCS(CONV)	FY 1994
CVN 76	FY 1995
LPD 17(L(X))	FY 1998
New Design SSN	FY 1998
TAGOS 25, AOE SLEP	FY 1999
TAGS 64	FY 1999
ADC(X)	FY 2000
LHD MOD REPEAT	FY 2001
CARRIER REPLACEMENT	FY 2002
SC 21	FY 2003
MCS(X), LHA/LH(X)	FY 2005

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2198
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Live Fire Test & Evaluation

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

(U) RELATED RDT&E:

(U) PE 0603564N (Ship Preliminary Design/Feasibility Studies)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	See Individual Ship Acquisition Program Documentation.				
Engineering Milestones	See Individual Ship Acquisition Program Documentation.				
T&E Milestones	See Individual Ship Acquisition Program Documentation.				
Contract Milestones	See Individual Ship Acquisition Program Documentation.				

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2198
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Live Fire Test and Evaluation

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Live Fire Test & Evaluation	6,960	976	0	861
b. Program Management Support	100	25	0	50
Total	7,060	1,001	0	911

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2198
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Live Fire Test and Evaluation

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
None											
Support and Management											
Misc.	Var.	A.N.*	Cont.	Cont.	0	100	25	0	50	Cont.	Cont.
Test and Evaluation											
NSWC-CD	WR	A.N.*	Cont.	Cont.	0	4,271	293	0	300	Cont.	Cont.
Bethesda,MD.											
NAWC-PAX	WR	A.N.*	Cont.	Cont.	0	2,104	293	0	261	Cont.	Cont.
Patuxent River,MD											
Misc.	Var.	A.N.*	Cont.	Cont.	0	585	390	0	300	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY
None

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
None										
Support and Management										
None										
Test and Evaluation										
None										

* As Needed

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2198
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E PROJECT TITLE:Live Fire Test and Evaluation

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	0	0	Cont.	Cont.
Subtotal Support and Management	0	100	25	0	50	Cont.	Cont.
Subtotal Test and Evaluation	0	6,960	976	0	861	Cont.	Cont.
Total Project	0	7,060	1,001	0	911	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F2199 New Design SSN	0	133,579	9,735	0	0	0	0	0	0	143,314

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses the design efforts for New SSN. The traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process called Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder and suppliers. This process is essential to achieve the maximum cost reduction possible in a low rate production environment. The general thrust of these efforts will be to translate the early IPPD design efforts for the New SSN into a well defined set of specifications and drawings suitable for a RFP package that supports development and construction of an effective nuclear attack submarine. Submarine systems will be specified with extreme sensitivity for vendor/manufacturing capability. Engineered systems will carefully balance military capability with the total life cycle cost and technical risk. This effort is necessary for a FY 98 lead ship construction contract award.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

2. (U) FY 1995 PLAN:

- (U) ($73,124) Begin IPPD effort to implement cost based methodology at all levels of the design. Develop drawings, commence examination and review of Contract Data Requirements List and develop design weight estimate. Analyze tradeoffs to improve and integrate systems for New SSN. Establish Government Furnished Equipment and Contractor Furnished Equipment vendor commitments with respect to cost, schedule and performance. Develop overall schedules integrating both government and contractor developments within overall ship design to support Milestone II decision. Work in close collaboration with the entire manufacturing industry throughout to ensure established requirements are clearly understood, achievable, reasonable, and biddable with minimum risk to industry.

- (U) ($7,453) Examine the System Definition Documents to determine the most cost effective system approach for the New SSN design.

- (U) ($10,932) Initiate review of specifications package to remove unnecessary and "how to" requirements, reduce cost and minimize risk to the government and industry. Establish specifications in detail to support the issue of a RFP for the design and construction of the lead ship.

- (U) ($34,275) Initiate design and engineering studies for the Main Propulsion Unit, Ships Service Turbine Generators, and other propulsion plant components.

- (U) ($7,795) Conduct supportability analyses and studies to support ship design specification and component development efforts. Establish critical ship and system logistic support guidance.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

3. (U) FY 1996 PLAN:

- (U) ($9,735) Continue Navy support of New SSN IPPD efforts; for: (1) co-located Program Office technical resources; (2) Review and evaluation of the New SSN Integrated Product Design.

4. (U) FY 1997 PLAN: Not applicable.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	0	137,322	XXX	XXX
(U) FY 1995 Appropriated:	XXX	137,322	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	-3,743	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	0	133,579	9,735	0

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 reductions are attributable to Small Business Innovative Research ($2,610K) and other undistributed reductions ($1,133K).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 201300	0	0	704,498	299,758	2,879,317	578,899	1,828,844	1,058,521	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0602323N (Submarine Technology)
(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0603721N (Environmental Protection)
(U) PE 0604558N (New Design SSN Development)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		3Q NEW SSN MS II			
Engineering Milestones					
T&E Milestones					
Contract Milestones		2Q/LOE 3Q/IPPD95			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E

PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

A. (U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. COMPUTER AIDED DESIGN EFFORTS	0	581	675	0
b. DESIGN/MANAGEMENT SUPPORT	0	4,684	3,343	0
c. WEAPONS SYSTEM	0	183	375	0
d. ON-SITE DESIGN SUPPORT	0	2,808	860	0
e. SHIP DESIGN	0	81,425	3,660	0
f. NAVY LABS	0	436	300	0
g. GENERAL PIPING	0	1,308	325	0
h. PROGRAM SUPPORT	0	84	197	0
i. MAIN PROPULSION UNIT	0	34,275	0	0
j. LOGISTICS	0	7,795	0	0
Total	0	133,579	9,735	0

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E

PROJECT NUMBER: F2199 PROJECT TITLE: New Design SSN

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in Thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NUWC, Newport, RI	VARIOUS	VARIOUS	2,754	2,754	0	0	2,754	0	0	0	2,754
N0002492C2110 General Dynamics/EB Div, Groton, CT	SS/CPFF	02/95	83,293	83,293	0	0	83,293	0	0	0	83,293
NSWC Carderock, Bethesda, MD	WR	10/94	8,534	8,534	0	0	4,644	3,890	0	0	8,534
N0002490C4014 General Dynamics/EB Div, Groton, CT	SS/CPFF	02/95	27,976	27,976	0	0	27,976	0	0	0	27,976
Miscellaneous	VARIOUS	VARIOUS	18,032	18,032	0	0	12,784	5,248	0	0	18,032
Support and Management											
TBD	C/CPFF	10/95	1,700	1,700	0	0	1,700	0	0	0	1,700
Miscellaneous			1,025	1,025	0	0	428	597	0	0	1,025

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: F2199
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT TITLE: New Design SSN

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	0	131,451	9,138	0	0	140,589
Subtotal Support and Management	0	0	2,128	597	0	0	2,725
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	133,579	9,735	0	0	143,314

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1353 Standard Hardware	4,180	8,236	60	2,953	2,963	3,170	3,193	3,287	CONT.	CONT.
WO845 AN/AYK-14	1,849	1,792	1,410	1,423	1,433	1,754	1,763	1,821	CONT.	CONT.
X1976 Next Generation Computer Resources	8,838	8,136	4,029	3,880	3,585	4,222	4,300	4,449	CONT.	CONT.
TOTAL	14,867	18,164	5,499	8,256	7,981	9,146	9,256	9,557	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Standard Embedded Computer Resources include computers, display systems, peripherals, and associated software. These equipments are integral building blocks of larger weapons, sensor, and combat direction systems. This program provides the technical planning and engineering support for development and evolution of the Navy's high performance embedded computer resources for transition to an open system architecture. The program includes product improvement of current generation computers AN/AYK-14, AN/UYK-43 and AN/UYK-44; development of state-of-the-art mass memory storage devices (MMSD); and development of interconnects, interfaces, protocols, and standards (hardware and software) for the highly flexible architectures needed for the Navy's next generation of open systems, COTS/NDI shipboard computers.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING and MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ACTUAL	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1353 Standard Hardware	4,180	8,236	60	2,953	2,963	3,170	3,193	3,287	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:
Planning and support for development and modification of the Navy's high performance embedded computer resources to meet Open Systems Architecture standards via the Computer Open Systems Implementation Program (COSIP), specifically, transitional improvements to the UYK-43 and UYK-44 computers, assessment of Open Architecture display components, the Mass Memory Storage Device (MMSD), other standard peripherals, and Navy Warfare Tactical Database (NWTDB).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($500) For UYK-43, completed Open Systems Module (OSM) development and began assessment of initial Open Systems products.
- (U) ($500) For UYK-44, began assessment of initial Open Systems products.
- (U) ($3,180) For COSIP, completed engineering model Computer Resources Information Base (CRIB) and began to populate the CRIB with Non-Developmental Item (NDI) products.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

2. (U) FY 1995 PLAN:

- (U) ($250) For UYK-43, certify initial Open Systems products.
- (U) ($250) For UYK-44, certify initial Open Systems products.
- (U) ($3,342) For COSIP, complete production model of CRIB and continue to populate CRIB with NDI components; assess and certify candidate technologies, including optical medium, flat panel displays and local area network technology, for application to AEGIS, Ship Defense and NTDS Software Improvement programs.
- (U) ($3,000) For MMSD, development of higher capacity magnetic commercial off-the-shelf drives and upgrade the Navy's four first article units.
- (U) ($1,394) For NWTDB, continue development, test and evaluation.

3. (U) FY 1996 PLAN:

- (U) ($60) Travel to monitor COSIP and MMSD efforts funded in FY-95 and to assure that COSIP activities are prepared to undertake the assessment and certification of candidate technologies scheduled to begin in FY-97.

4. (U) FY 1997 PLAN:

- (U) ($2,953) Assess and certify candidate technologies, including distributed operating and network systems for AEGIS, Ship Defense, and other related activities.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,180	5,484	xxx	xxx
(U) FY 1995 Appropriated	xxx	8,484	xxx	xxx
(U) Adjustments from appropriated/ FY 1995 PRESBUDG:	0	-248	xxx	xxx
(U) FY 1996/97 PRESBUDG Submit:	4,180	8,236	60	2,953

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The funding decrease in FY-95 is for general reductions.

(U) Schedule: Not applicable

(U) Technical: Not applicable

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353

PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

(U) RELATED RDT&E:
(U) PE 0603270N (ELECTRONIC WARFARE ADVANCED TECHNOLOGY)
(U) PE 0603382N (ADV COMBAT SYSTEM TECHNOLOGY)
(U) PE 0603502N (SHALLOW WATER MCM)
(U) PE 0603755N (COOPERATIVE ENGAGEMENT)
(U) PE 0604301N (MK-92 FCS UPGRADE)
(U) PE 0604307N (AEGIS WEAPON SYSTEM MODS)
(U) PE 0604366N (STANDARD MISSILE IMPROVEMENTS)
(U) PE 0604372N (NEW THREAT UPGRADE)
(U) PE 0604518N (NTDS SOFTWARE IMPROVEMENTS)
(U) PE 0604755N (SHIP SELF DEFENSE)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	3Q MMSD MS III				
Engineering Milestones	1Q UYK-43 CDR				
T&E Milestones	4Q UYK-43 DTI				
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a.Primary Hardware Dev	1,000	2,120	0	0
b.Dev Spt Equip Acq	1,615	2,000	0	1,200
c.Contractor Eng Spt	350	784	0	400
d.Government Eng Spt	1,115	3,232	0	1,303
e.Travel	100	100	60	50
Total	4,180	8,236	60	2,953

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Miscellaneous	VARIOUS	VARIOUS	201,600	201,600	200,000	1,050	2,170	0	0	0	203,220
Support and Management											
Miscellaneous	VARIOUS	VARIOUS	CONT.	CONT.	4,500	350	784	0	400	CONT.	CONT.
Test and Evaluation											
NCCOSC, San Diego, CA.	WR/RCP	VARIOUS	CONT.	CONT.	6,000	1,320	130	0	1,808	CONT.	CONT.
Miscellaneous	VARIOUS	VARIOUS	CONT.	CONT.	24,000	1,460	5,152	60	745	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management			NOT APPLICABLE							
Test and Evaluation										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources
PROJECT NUMBER: S1353
PROJECT TITLE: Standard Hardware

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	200,000	1,050	2,170	0	0	0	203,220
Subtotal Support and Management	4,500	350	784	0	400	CONT.	CONT.
Subtotal Test and Evaluation	30,000	2,780	5,282	60	2,553	CONT.	CONT.
Total Project	234,500	4,180	8,236	60	2,953	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0845 AN/AYK-14	1,849	1,792	1,410	1,423	1,433	1,754	1,763	1,821	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The AN/AYK-14 project provides for airborne digital computer requirements with a standard design that has permitted state-of-the-art technology infusion through pre-planned product improvements. The focus of the Advanced AYK-14 (AAYK-14) development is to provide the bridge necessary to evolve new and existing platforms to an Open Systems Architecture (OSA). The AAYK-14 program includes: (1) the development of commercially based Reduced Instruction Set Computer (RISC) Processor Module (RPM) that will permit communications between existing AYK-14 16 bit Compiler Monitor System (CMS-2) modules and AAYK-14 32-bit Ada modules, (2) development of a backplane based on the commercial Institute of Electrical and Electronic Engineers (IEEE)/Next Generation Computer Resources (NGCR) OSA standard Futurebus+ interface, (3) support of the additional design, test and qualification necessary to meet multi-user requirements and bring other program's non-development item/commercial off-the-shelf (NDI/COTS) Futurebus+ OSA modules into the AAYK-14 family.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,368) Implemented commonality design/test into the SH-60 Integrated Mission Processor (IMP) AAYK-14 and conducted Preliminary Design Review (PDR)/Critical Design Review (CDR).
- (U) ($180) Coordinated integration of AAYK-14 technology into V-22's Advanced Mission Computer (AMC) and conducted PDR and CDR.
- (U) ($301) Investigated/supported new implementation of the AAYK-14 architecture.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

2. (U) FY 1995 PLAN:

- (U) ($1,466) Continue SH-60 IMP/AAYK-14 and V-22 AMC/AAYK-14. Conduct qualification test, begin Reliability Development Test (RDT) for SH-60B IMP/AAYK-14. Complete Engineering & Manufacturing Development (E&MD) for V-22 AMC/AAYK-14.
- (U) ($326) Continue militarization of OSA commercial product to AAYK-14 family. Begin AAYK-14 technology transfer to EA-6B mission processing upgrade.

3. (U) FY 1996 PLAN:

- (U) ($1,000) Complete E&MD and integration of SH-60 IMP/AAYK-14.
- (U) ($205) Complete AAYK-14 technology transfer for EA-6B mission processing upgrade.
- (U) ($205) Continue militarization of OSA commercial product (NDI/COTS) to the AAYK-14 family.

4. (U) FY 1997 PLAN:

- (U) ($526) Begin technology shrink of existing AAYK-14 module set to the smaller 6" by 6" SEM-E form factor for tactical aircraft (F/A-18 E/F) applications.
- (U) ($447) Begin upgrading AAYK-14's OSA interface to support both 32-bit and 64-bit inter-module processing.
- (U) ($450) Begin updating AAYK-14 core modules with next generation commercial technology multi-chip module (MCM) micro-processors and memories (MIPS 5000/6000 micro-processors and 16/32MB memory chips).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

PROJECT NUMBER: W0845
PROJECT TITLE: AN/AYK-14

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,849	1,886	XXX	XXX
(U) FY 1995 Appropriated:	XXX	1,886	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	0	-94	XXX	XXX
(U) FY 1996/1997 PRESBUDG Submit:	1,849	1,792	1,410	1,423

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: No change for FY 1994. FY 1995 decrease reflects PBD 631 and miscellaneous adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

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

(U) RELATED RDT&E:

(U) PE 0604212N ASW and Other Helo Development
(U) PE 0604262N V-22
(U) PE 0604270N EA-6B/EW Counter Response

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		4Q AMC/AAYK-14 PCA			
Engineering Milestones	4Q IMP/AAYK-14 CDR 3Q AMC/AAYK-14 CDR				
T&E Milestones		1Q AMC/AAYK-14 RDT	2Q IMP/AAYK-14 RDT		
Contract Milestones			2Q AMC/AAYK-14 Production		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

A. (U) PROJECT COST BREAKDOWN ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Program Planning	25	25	25	25
b. Prime Equip/E&MD Prime Contract	300			
c. Platform Integration		100	100	25
d. Systems Engineering	1,180	894	933	1,016
e. Documentation	150	100	100	100
f. Travel	19	30	30	30
g. Contracting Services	175	643	222	227
Total	1,849	1,792	1,410	1,423

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

B. (U) BUDGET ACQUISITION HISTORY AND PLANNIN INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Support Miscellaneous	Various	Various	Various	Various	13,176	1,674	1,149	1,188	1,196	Cont.	CONT.
Support and Management	Various	Various	Various	Various	145	175	643	222	227	CONT.	CONT.
Test and Evaluation					0	0	0	0	0		

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0		
Support and Management				0	0	0	0	0		
Test and Evaluation				0	0	0	0	0		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	13,176	1,674	1,149	1,188	1,196	CONT.	CONT.
Subtotal Support and Management	145	175	643	222	227	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	CONT.	CONT.
Total Project	13,321	1,849	1,792	1,410	1,423	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X1976
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NGCR

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X1976 Next Generation Computer Resources	8,383	8,136	4,029	3,880	3,585	4,222	4,300	4,449	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Next Generation Computer Resources. The Next Generation Computer Resources (NGCR) program operating in conjunction with industry is incorporating Navy weapons system requirements into a set of commercial computer hardware and software interface standards. This will enable the Navy to apply commercial standards to a wide range of weapons systems designs, thereby leveraging commercial open system architecture and standardization trends. The program encompasses all future tactical computer resources for the full range of Navy warfighting shipboard, airborne and shore-based systems. NGCR influenced commercial standards will enable Navy tactical systems to transition to open systems architectures for interoperability and commonality of multi-vendor products, competition for system upgrades, and application of state-of-the-practice technologies.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:
   - (U) ($508) Published first update to Local Area Network (LAN) standards.
   - (U) ($4,260) Continued industry/Navy working groups for Backplane (BP), Operating Systems (OS), High Speed Data Transfer Network (HSDTN), Data Base Management Systems (DBMS), Graphics, and High Performance Network interface standards to incorporate tactical weapons systems needs into commercial standards.
   - (U) ($287) Continued Fault Tolerance/Real-Time requirements/analysis and user support.
   - (U) ($1,050) Continued conformance test certification for Backplane; and complete finalization of certification methodology and procedures.
   - (U) ($930) Continued Backplane and LAN systems integration support for users programs.
   - (U) ($1,803) Continued OS evaluation model contracts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X1976
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NGCR

2. (U) FY 1995 PLAN:

- (U) ($480) Publish OS standards.
- (U) ($3,672) Continue industry/Navy working groups for OS, HSDTN, and HPN interface standards to incorporate tactical weapons systems needs into commercial standards.
- (U) ($1,247) Continue Backplane, OS, HSDTN, HPN and LAN systems integration support for users programs.
- (U) ($800) Terminate industry/Navy working group for DBMS interface standards.
- (U) ($719) Terminate industry/Navy working group for Graphics interface standards.
- (U) ($318) Terminate Fault Tolerance/Real-Time requirements/analysis and user support.
- (U) ($900) End OS evaluation model contracts.

3. (U) FY 1996 PLAN:

- (U) ($1,469) Continue participation in standards organizations for OS, HSDTN, and HPN interface standards to incorporate tactical weapons systems needs into commercial standards.
- (U) ($1,100) Continue Backplane, OS, HSDTN, HPN and LAN systems integration support for users programs.
- (U) ($1,460) Commence restructure of Naval C3I data base architecture under auspices of Naval Tactical Data Base (NWTDB).

4. (U) FY 1997 PLAN:

- (U) ($1,380) Continue participation in standards organizations for OS, HSDTN, and HPN interface standards to incorporate tactical weapons systems needs into commercial standards.
- (U) ($1,100) Continue Backplane, OS, HSDTN, HPN and LAN systems integration support for users programs.
- (U) ($1,400) Complete restructure of Naval C3I data base architecture under auspices of Naval Tactical Data Base (NWTDB).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X1976
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resouces PROJECT TITLE: NGCR

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	11,138	8,404		
(U) FY 1995 Appropriated:		8,404		
(U) Adjustments from Appropriated/ FY95 PRESBUDG:	-2,300	-268		
(U) FY 1996/97 PRESBUDG Submit:	8,838	8,136	4,029	3,880

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY-94 reduction reflects a $2.3M reprogramming (BTR #94-6 dtd 11 April 1994) from Project X1976 to P.E. 0604707N, Project X2144.
FY-95 was decreased by $268K, $53K to accommodate Small Business Innovative Research, and $215K to reflect undistributed reductions for Travel, Consulting Services, Federally Funded Research Centers, and University Research.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

PROJECT NUMBER: X1976
PROJECT TITLE: NGCR

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Engineering Support	415	576	269	180
b. Standards Working Group Support	4,184	4,890	1,100	1,100
c. Laboratory Test Models	1,803	900	-	-
d. Application Engineering	1,049	1,360	1,000	1,000
e. Conformance	1,050	-	-	-
f. Supportability	337	410	200	200
g. Naval Warfare Tactical Data Base	-	-	1,460	1,400
Total	8,838	8,136	4,029	3,880

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT NUMBER: X1976 PROJECT TITLE: NGCR

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Major Contracts of $1M or more: N/A											
All other contracts:	Various				22,339	2,675	2,361	1,835	1,775	CONT.	CONT.
Lab reimbursable efforts of $1M or more:											
NUWC, Newport, RI	Various				6,020						
		11/93				1,118					
		11/94					1,001				
		11/95						243			
		11/96							243	CONT.	CONT.
NSWC-CRANE Div., Crane, IN											
	Various				10,626						
		11/93				1,571					
		11/94					624				
		11/95						468			
		11/96							468	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

PROJECT NUMBER: X1976
PROJECT TITLE: NGCR

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development: (CONTINUED)											
Lab reimbursable efforts of $1M or more:											
NAWC-ADW, Warminster, PA					5,458						
		Various				953					
		11/93					1,081				
		11/94						243			
		11/95							243	CONT.	CONT.
		11/96									
All other support activities less than $1M:											
		Various			26,460	2,521	3,069	1,240	1,151	CONT.	CONT.

Support and Management: N/A

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X1976
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NGCR

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation: N/A											

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program

GOVERNMENT FURNISHED PROPERTY

Product Development: N/A

Support and Management: N/A

Test and Evaluation: N/A

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X1976
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NGCR

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	70,903	8,838	8,136	4,029	3,880	CONT.	CONT.
Subtotal Support and Management	-	-	-	-	-	-	-
Subtotal Test and Evaluation	-	-	-	-	-	-	-
Total Project	70,903	8,838	8,136	4,029	3,880	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604601N
PROGRAM ELEMENT TITLE: Mine Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0267 Mine Improvements	2,692	3,161	3,045	2,762	3,091	3,904	3,929	4,037	CONT.	CONT.
Q0272 QUICKSTRIKE	2,889	0	0	0	0	0	0	0	0	116,698
TOTAL	5,581	3,161	3,045	2,762	3,091	3,904	3,929	4,037	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for engineering and manufacturing development of mines and their support systems to counter current and projected enemy submarines, surface ships, and mine warfare tactics.

(U) The Mine Improvements project (Q0267) modifies or improves existing mine systems to maintain their effectiveness, quality, reliability, and readiness against evolving threat targets and tactics in major regional conflict and littoral warfare scenarios.

(U) The QUICKSTRIKE project (Q0272) developed major subsystems for QUICKSTRIKE MK 62, MK 63, and MK 65 bottom mines. The last development effort was the QUICKSTRIKE Mod 3 system, which included the MK71 Target Detecting Device (TDD) and the MK 75 Safety and Arming (S&A) device. No further funding for this project is identified.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0267 Mine Improvements	2,692	3,161	3,045	2,762	3,091	3,904	3,929	4,037	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This non-acquisition project is the only R&D program for mine systems, and is the sole support for the capability to maintain the effectiveness of mines facing new threat targets and increasing emphasis on major regional conflicts and littoral warfare in shallow water. Project tasks are grouped into several areas: 1a) Threat Modeling/Analysis, which collects, analyzes, and develops digital models of data on current priority threat target characteristics to support computer simulations of the "one-on-one" encounter between a mine and its target; 1b) Target Detection and Response, which uses target models to develop optimal mine designs, settings, and firing algorithms; 1c) Mine Warfare Modeling/Analysis, which uses models of the targets and the mines to support computer simulation of the "many-on-many" encounter between a minefield and all the targets and mine countermeasures; 2a) Components/Subsystems, which develops upgrades of mine components to maintain effectiveness against current threat targets using proven state-of-the-art technology; and 2b) Advanced Power Sources, which develops improved batteries without hazardous heavy metals. Typical Mine Improvements efforts include: obtaining, analyzing, and modeling threat target radiated noise signatures and damage susceptibility data; determining optimal mine settings/algorithms; updating minefield planning models and the databases supporting them; and improving the performance of mine subsystems such as sensors or batteries.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,700) Developed signature and damage models of fast patrol boat threat targets and updated the database at Commander Mine Warfare Command (COMINEWARCOM) at Corpus Christi, TX. Began development of an upgrade to the MK 57 Target-Detecting Device (TDD) to optimize its performance against fast patrol boats. Updated and improved the Uncountered Minefield Planned Model (UMPM) at COMINEWARCOM.
- (U) ($992) Completed FOT&E and obtained approval for Fleet use and Full-Rate Production of the MK 164 Flight Gear Kit. Continued the development of standard lithium cells for use in mine warfare system power supplies. Monitored the Joint Direct Attack Munition (JDAM) program to maximize compatibility with QUICKSTRIKE mine TDDs.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

2. (U) FY 1995 PLAN:

- (U) ($1,850) Continue to develop signature and damage models of fast patrol boats; begin development of models of modern diesel-electric submarines. Continue development of the upgrade to the MK 57 TDD to accommodate fast patrol boats. Continue improvements to the Uncountered Minefield Planning Model and upgrades to its database at COMINEWARCOM.
- (U) ($1,311) Complete the development of an AA-size standard non-magnetic lithium cell for use in mine warfare system power supplies. Begin development of improved pressure and magnetic sensors. Complete the technical data package for the new, programmable MK 71 TDD. Conduct system concept analyses to response of the Improved Submarine-Launched Mobile Mine (SLMM) and Littoral Sea Mine Mission Need Statements. Continue to monitor the JDAM program and other programs permitting launching of mines from stand-off distances. Analyze options for using QUICKSTRIKE mines as depth bombs.

3. (U) FY 1996 PLAN:

- (U) ($2,200) Continue to develop signature and damage models of diesel-electric submarines; begin development of models of mini-submarines and surface-effect craft. Continue to determine optimal mine settings to accommodate priority threat targets. Begin development of minefield behavior evaluation model for COMINEWARCOM use in mine warfare planning.
- (U) ($845) Begin the development of a larger lithium cell for use in standard mine warfare system power supplies. Complete development of improved magnetic sensor. Begin development of improved TDD test set. Continue development of improved pressure sensor. Continue to conduct system concept analyses in response of the Littoral Sea Mine Mission Need Statements. Continue to monitor standoff weapon programs for compatibility with mines.

4. (U) FY 1997 PLAN:

- (U) ($1,950) Continue to develop signature and damage models of diesel-electric submarines, mini-submarines, surface-effect craft; begin development of models of additional priority targets identified by COMINEWARCOM. Continue to determine optimal mine settings to accommodate threat. Begin development of countered minefield models to be used to assist in planning mine countermeasures operations. Continue development of minefield behavior evaluation model.
- (U) ($812) Continue development of larger lithium cell for use in standard mine warfare system power supplies; evaluate the improved safety and performance potential of new power supply technologies. Continue the development of improved pressure sensor and TDD test set. Continue to conduct system concept analyses in response of the Littoral Sea Mine Mission Need Statement. Continue to monitor standoff weapon programs for compatibility with mines.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROGRAM ELEMENT TITLE: Mine Development PROJECT NUMBER: Q0267 PROJECT TITLE: Mine Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,692	3,223	XXX	XXX
(U) FY 1995 Appropriated:	XXX	3,223	XXX	XXX
(U) Adjustments from Approp/FY95 PRESBUDG:	0	-62	XXX	XXX
(U) FY 1996/97 OSD Budget Submit:	2,692	3,161	3,045	2,762

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 1995 - Adjustments for:(-$5) university research,(-50) contracted support services,(-4) travel, and (-3) Small Business Innovation Research.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N
PROGRAM ELEMENT TITLE: Mine Development
PROJECT NUMBER: Q0267
PROJECT TITLE: Mine Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Testing	200	400	300	300
b. System Engineering Development	858	1,101	990	992
c. Software Support	973	950	1,110	850
d. Logistics Support	225	310	250	250
e. Program Management	411	380	375	350
f. Travel	25	20	20	20
Totals	2,692	3,161	3,045	2,762

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands):

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NSWC CSS WODET	WR	10/95	Cont.	Cont.	9,391	2,056	2,361	2,350	2,092	Cont.	Cont.
NSWC/PORT HUE (YT)	WR	10/92	2,849	2,849	2,849	0	0	0	0	2,849	2,849
Support and Management											
NSWC CSS WODET	WR	10/95	Cont.	Cont.	5,701	348	300	295	270	Cont.	Cont.
Vredenburg,	CPFF	12/95	488	488	0	88	100	100	100	100	488
Reston, Va											
Misc	Various	Various	2,375	2,375	2,375	0	0	0	0	2,375	2,375
Test and Evaluation											
NSWC CSS WODET	WR	10/95	Cont.	Cont.	3,371	200	400	300	300	Cont.	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROGRAM ELEMENT TITLE: Mine Development PROJECT NUMBER: Q0267 PROJECT TITLE: Mine Improvements

GOVERNMENT-FURNISHED PROPERTY

None.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	12,240	2,056	2,361	2,350	2,092	Cont.	Cont.
Subtotal Support and Management	8,076	436	400	395	370	Cont.	Cont.
Subtotal Test and Evaluation	3,371	200	400	300	300	Cont.	Cont.
Total Project	23,687	2,692	3,161	3,045	2,762	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
A2183 SLAM ER	16,972	62,927	40,517	35,729	27,991	5,371	0	0	0	189,507
E1341 Advanced Rocket System	10,612	14,449	0	0	0	0	0	0	0	36,724
TOTAL	27,584	77,376	40,517	35,729	27,991	5,371	0	0	0	214,568

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) A2183/STANDOFF LAND ATTACK MISSILE - EXPANDED RESPONSE Description: This program funds the development of SLAM Expanded Response (ER) designed to maintain baseline SLAM capability while improving performance in the areas of launch and control aircraft survivability, immunity to countermeasures, probability of kill against hardened targets and improved user interfaces for both mission planning and launch aircraft integration. The SLAM ER consists of both hardware and software upgrades to the missile. SLAM ER incorporates many non-development items i.e., the Embedded Global Positioning System/Integrated Navigation System (GPS/INS) (EGI), modified Tomahawk wings and warhead, and the existing advanced mode of the AWW-13 data link pod.

(U) E1341/ADVANCED ROCKET SYSTEM (ARS) Description: The ARS is an ACAT III joint service program with the Navy, Army, and Air Force (Navy lead) that will "neck down" existing 2.75-inch and 5-inch Zuni rocket systems to one that can satisfy both helicopter and fixed wing requirements. It will provide enhance survivability through increased standoff delivery capability and improved lethality. It will also satisfy fleet safety requirements by integrating Insensitive Munitions (IM). This program terminates in FY 1995.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
SLAM ER A2183	16,972	62,927	40,517	35,729	27,991	5,371	0	0	0	189,507

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Standoff Land Attack Missile (SLAM) is designed to provide an intermediate range day/night air-to-surface weapon for use against land and in-port surface targets. The SLAM ER program upgrades the hardware increasing hardened target penegration capability with a modified Tomahawk Block III warhead; adding a derivative of the Joint Service's Embedded GPS/INS (EGI) set which adds reprogrammable memory enabling missile software updates at O and I level maintenance sites curtailing future recurring retrofit costs; enhancing software to provide a retargeting capability before launch against pop up targets and upgrading terrain following capability; making man-in-the-loop improvements. Navy has integrated SLAM mission planning into the Tactical Aircraft Mission Planning System (TAMPS) to reduce mission planning time and eliminate SLAM unique mission planning hardware; increasing stability and seeker dome rain protection using the aero nose; and increased anti-jam performance with the EGI and advanced mode of AWW-13 pod. This improved weapon will ultimately be compatible with the F/A-18, with potential for application/integration with other aircraft.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($ 1,500) Commenced F/A-18 aircraft integration.
- (U) ($ 3,671) Supported preparation of Milestone (MS) IV/II Decision. Commenced Warhead, Government and Contractor support.
- (U) ($ 5,500) Initiated Engineering and Manufacturing Design (E&MD) Risk Reduction efforts.
- (U) ($ 801) Commenced Test and Evaluation planning.

2. (U) FY 1995 PLAN:

- (U) ($ 5,500) (FY 94 funds) Continue E&MD Risk Reduction efforts.
- (U) ($29,000) Continue E&MD efforts and commence support of Preliminary Design Review (PDR) and Critical Design Review (CDR).
- (U) ($ 5,050) Continue F/A-18 aircraft integration efforts and commence flight clearance and software efforts.
- (U) ($ 5,100) Commence Osprey Jaywalker efforts.
- (U) ($ 7,777) Attain MS IV/II. Continue Warhead, Government and Contractor support.
- (U) ($ 1,000) Continue Test and Evaluation.

3. (U) FY 1996 PLAN:

- (U) ($15,000) (FY 95 funds) Continue support of E&MD, PDR, and CDR.
- (U) ($21,017) Continue E&MD efforts and complete CDR.

FY 1996 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604603N PROJECT NUMBER: A2183
PROGRAM ELEMENT TITLE: Air-to-Surface-Munitions PROJECT TITLE: SLAM ER

3. (U) FY 1996 PLAN (Cont'd):

- (U) ($ 6,500) Continue F/A-18 aircraft integration, flight clearance and software efforts.
- (U) ($ 3,000) Continue Osprey Jaywalker efforts.
- (U) ($ 2,000) Continue Test and Evaluation.
- (U) ($ 8,000) Continue Warhead, Government and Contractor support.

4. (U) FY 1997 PLAN:

- (U) ($16,729) Continue E&MD efforts.
- (U) ($ 4,000) Complete F/A-18 aircraft integration, flight clearance and software efforts.
- (U) ($ 3,500) Continue Osprey Jaywalker efforts.
- (U) ($ 5,500) Continue Warhead, Government and Contractor support.
- (U) ($ 6,000) Continue Test and Evaluation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

B. (U) PROGRAM CHANGE SUMMARY:

	FY 94	FY 95	FY 96	FY 97
(U) FY 1995 President's Budget:	18,902	62,337	XXX	XXX
(U) FY 1995 Appropriated:	XXX	62,337	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-1,930	+ 590	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	16,972	62,927	40,517	35,729

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 funding adjusted to delete reprogrammed funding for the I-TALD effort in the amount of $1,930. The FY95 net increase of +590K represents a below threshold reprogramming of +$1,841K for classified programs and the allocation of undistributed adjustments of -$1,251K.

(U) Schedule: Schedule changes due to delays in program Cost and Operational Effectiveness Analysis and Navy Program Decision Memorandum.

(U) Technical: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN — DATE: February 1995

Budget Activity: 5 — PROGRAM ELEMENT: 0604603N — PROGRAM ELEMENT TITLE: Air-to-Surface Munitions — PROJECT NUMBER: A2183 — PROJECT TITLE: SLAM ER

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN Line 7 Quantity	75	58	30	15	0	0	0	0	0	707
SLAM BASELINE	85,954	68,243	46,368	25,596	0	0	0	0	0	994,666

(U) RELATED RDT&E: Not applicable

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q PROGRAM RVW WITH ASN, RDA	2Q MS IV/II		3Q FRR	2Q/99 MSIII
Engineering Milestones		2Q SRR 4Q PDR	3Q CDR 3Q SEPARATION TEST		
T&E Milestones		1Q TEMP		1Q CC 1Q DT	2Q/98 DT/OT* 1Q/98 DT* 2Q/98 OTRR* 2Q/98 LRIP* 1Q/99 OPEVAL*
Contract Milestones	4Q SLAM DEVEL 6 MO DEL ORDER				1Q/99 FRP

*REPRESENTS COMPLETION DATES

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. EM&D Support	11,000	44,000	21,017	16,729
b. Osprey Jaywalker CCM/Sep	0	5,100	3,000	3,500
c. F/A-18 Flight/AC Integration	1,500	3,750	4,200	3,000
d. F/A-18 Software Development	0	1,300	2,300	1,000
e. Systems Engineering	994	2,000	2,000	2,000
f. Warhead Development	2,467	4,050	4,570	2,570
g. Test and Evaluation	801	1,000	2,000	6,000
h. Government Field Support	120	1,435	1,100	600
i. Consulting Service (CS)	40	242	300	300
j. Travel	50	50	30	30
Total	16,972	62,927	40,517	35,729

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS:

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
McDonnell Douglas St. Louis, MO	SS/CPIF	9/94	122,477	122,477	0	12,500	49,100	27,587	20,799	12,491	122,477
China Lake, CA	WX	11/95	25,332	25,332	0	3,461	6,000	6,500	4,500	4,871	25,332
NAVSUP	PD	11/95	12,600	12,600	0	0	5,100	3,000	3,500	1,000	12,600
Miscellaneous	WX	11/95	4,455	4,455	0	120	1,435	1,100	600	1,200	4,455
Support and Management:											
Prometheus Alexandria, VA IDIQ+T&M		11/95	1,842	1,842	0	90	292	330	330	800	1,842
Test and Evaluation:											
Pt Mugu, CA	WX	11/95	22,801	22,801	0	801	1,000	2,000	6,000	13,000	22,801

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Air-to-Surface Munitions

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	16,081	61,635	38,187	29,399	19,562	164,864
Subtotal Support and Management	0	90	292	330	330	800	1,842
Subtotal Test and Evaluation	0	801	1,000	2,000	6,000	13,000	22,801
Total Project	0	16,972	62,927	40,517	35,729	33,362	189,507

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604610N
PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
V2234 LIGHTWEIGHT HYBRID TORPEDO	8,899	10,876	22,027	16,688	10,149	12,570	5,049	5,854	0	92,112

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The funding is to design, integrate and test a Lightweight Hybrid Torpedo by taking advantage of current USN investments in torpedo hardware and torpedo technology. The torpedo will be comprised of components from the MK46 Torpedo, MK50 Torpedo and MK48 ADCAP Torpedo. The Lightweight Hybrid Torpedo will incorporate improvements in the shallow water, littoral warfare counter-countermeasure environment.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($4,000) Conducted risk reduction/preliminary studies and analysis on MK50, MK46 and MK48 components to be integrated into the Lightweight Hybrid Torpedo.

2. (U) FY 1995 PLAN:

- (U) ($4,000) Initiate configuration definition and integration efforts which include refinement of usability and modification requirements of hybrid components. This effort is being funded with FY 1994 budget authority made possible by release of funds by Congress in December 1994.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

- (U) ($ 899) Conduct digital and hybrid simulations to develop and evaluate hardware integration, and develop predictions in conjunction with preparation of test & evaluation scenarios. This effort is being funded with FY 1994 budget authority made possible by release of funds by Congress in December 1994.
- (U) ($6,900) Develop and procure Engineering Development Models (EDMs) to demonstrate capability.
- (U) ($1,076) Develop processes and documentation to allow transition from R&D to production.
- (U) ($1,900) Improve tactical software for countermeasures and terminal homing improvements for short ranges.
- (U) ($1,000) Stored Chemical Energy Propulsion System boiler redesign effort and the completion of the JP-5/Compressed Oxygen alternate fuels demonstration (FY95 Congressional Add).

3. (U) FY 1996 PLAN:
   - (U) ($3,853) Continue system integration efforts.
   - (U) ($5,455) Continue development of tactical software.
   - (U) ($11,519) Procurement and test of Pre-Production Models.
   - (U) ($1,200) Conduct initial in-water developmental testing.

4. (U) FY 1997 PLAN:
   - (U) ($6,640) Continue system integration efforts and tactical software development.
   - (U) ($1,500) Continue in-water developmental testing.
   - (U) ($8,548) Continue procurement and test of Pre-Production Models.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	8,899	10,284	XXX	XXX
(U) FY 1995 Appropriated:	XXX	11,284	XXX	XXX
(U) Adjustments from Approp/FY 1995 PRESBUDG:	0	-408	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	8,899	10,876	22,027	16,688

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1995 funding decreased 124K for Small Business Innovative Research and 284K undistributed Congressional reductions for university research, travel, and consulting services.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT NUMBER: V2234 PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN/321500	0	0	0	0	9,926	16,524	39,545	40,567	CONT	CONT

(U) RELATED RDT&E:

(U) PE 0603691N (MK48 ADCAP (ADV))
(U) PE 0603610N (MK50 SHALLOW WATER PERFORMANCE)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		1Q MS IV/II			1Q FY98 NPR 4Q FY99 MS III
Engineering Milestones					3Q FY98 FCA 2Q FY99 PCA
T&E Milestones					2Q FY98 TECHEVAL 2Q FY99 OPEVAL
Contract Milestones		3Q EDM	3Q PPM		2Q FY98 LRIP

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT NUMBER: V2234 PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	0	2,092	8,719	5,748
b. Software Development	0	4,545	5,355	2,737
c. Integrated Logistics Support	0	0	0	850
d. Reliability, Maintainability & Availability	0	0	0	.850
e. Technical Data	0	299	2,100	1,600
f. Developmental Test & Evaluation	0	0	1,200	1,500
g. Systems Engineering	4,899	3,300	3,753	2,603
h. Preliminary Studies & Analysis	4,000	140	0	0
i. Program Management Support	0	500	900	800
Total	8,899	10,876	22,027	16,688

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NUWC, Newport	WR	APR 94	46,677	46,677	0	6,799	4,826	8,572	5,414	21,066	46,677
Prime Contractor	C/FPI	DEC 94	27,156	27,156	0	0	4,400	10,200	8,000	4,556	27,156
Miscellaneous	WR	APR 94	3,529	3,529	0	1,000	450	255	324	1,500	3,529
Support and Management											
Support Contract	C/CPFF	DEC 94	4,900	4,900	0	100	500	900	800	2,600	4,900
Miscellaneous	PD	MAY 94	2,000	2,000	0	1,000	400	100	100	400	2,000
Test and Evaluation											
NUWC, Newport	WR	NOV 95	6,200	6,200	0	0	0	1,200	1,500	3,500	6,200

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Prime Contractor	C/FPI	DEC 94	JAN 95	0	0	300	800	550	0	1,650
Support and Management				0	0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0	0

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT HYBRID TORPEDO PROJECT TITLE: LIGHTWEIGHT HYBRID TORPEDO

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	7,799	9,976	19,827	14,288	27,122	79,012
Subtotal Support and Management	0	1,100	900	1,000	900	3,000	6,900
Subtotal Test and Evaluation	0	0	0	1,200	1,500	3,500	6,200
Total Project	0	8,899	10,876	22,027	16,688	33,622	92,112

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1969 Mine Neutralization Equipment	2,659	420	263	123	6	0	0	0	0	24,991
C2104 Wide Area Mine Clearing (WAMC) System[1]	0	0	0	0	0	0	4,973	4,973	CONT.	CONT.
C2106 Advanced Countermeasures System (ACS)[2]	0	0	0	2,791	3,130	3,473	6,285	1,913	CONT.	CONT.
TOTAL	2,659	420	263	2,914	3,136	3,473	11,258	6,886	CONT.	CONT.

1. This program was formerly titled Wide Area Mine Clearing (WAMC) System. The current title is Off/Route Smart Mine Clearance (ORSMC). FY 1994 through FY 1996 funding is contained in Program Element (PE) 0603640M, Marine Corps Advanced Technology Demonstrations (ATD), Project C2223, the consolidated Marine Corps ATD project. FY 1997 through FY 1999 funding is contained in PE 0603612M, Marine Corps Mine Countermeasures, Project C2104. FY 2000 through FY 2001 funding is contained in this PE.

2. This program was formerly titled Distributed Explosive Mine Neutralization System (DEMNS). The current title is Advanced Countermeasures System (ACS). FY 1994 funding is split between two PEs: $645 in PE 0603612M, Marine Corps Mine Countermeasures, Project C2106, ACS and $1,413 in PE 0603640M, Project C2223. FY 1995 and FY 1996 funding is contained in PE 0603612M, Project C2106. FY 1997 through FY 2001 funding is contained in this PE.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE covers a wide variety of present and emerging technologies which are projected to contribute to the Marine Corps mine/countermine capability. Largely focused on countermine efforts, this PE will specifically develop systems which will neutralize mines. The dynamic nature and complexity of the countermine problem and its relative urgency necessitates the advanced development of a variety of systems which will each contribute to achieving overall countermine effectiveness.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine/Countermeasures (Engineering and Manufacturing Development)

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1969 Mine Neutralization Equipment	2,659	420	263	123	6	0	0	0	0	24,991

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program contains the Marine Corps' mine neutralization equipment for countermine systems in the Engineering and Manufacturing Development (EMD) phase. This program will test and evaluate existing mine neutralization systems for both individuals and vehicles. The project includes the Anti-personnel Obstacle Breaching System (APOBS) which neutralizes both anti-personnel mines and light obstacles. In addition, the project includes the development of the Magnetic Countermine System (MACS) for neutralizing magnetically influenced anti-tank (AT) mines which are emerging as the mine of choice, particularly in the scatterable mine arena. Finally, the project includes the development of a Full Width Mine Rake (FWMR) for the Assault Amphibious Vehicle (AAV), to clear AT mines in the vehicle path.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($2,217) Completed the APOBS Reliability Enhancement Program. Prepared Milestone III documentation.
- (U) ($251) Finalized the development of the AAV/FWMR system, to include final Level II drawing package and Developmental Testing (DT) II.
- (U) ($131) Finalized the development of the armored coil for MACS.
- (U) ($35) Completed Level III drawings for the armored coil and drafted purchase description for the main coil and armor of MACS.
- (U) ($25) Conducted evaluation of the armored coil interface and survivability against live AT mines.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering) PROJECT NUMBER: C1969 PROJECT TITLE: Mine Neutralization Equipment

2. (U) FY 1995 PLAN:

- (U) ($370) Conduct final system flight testing. Obtain final APOBS Weapons System Safety Explosive Review Board approval. Complete final APOBS Milestone III documentation. Achieve APOBS Milestone III decision.
- (U) ($50) Finalize MACS Milestone III documentation. Conduct combined Operational and Developmental II Testing for the MACS system.

3. (U) FY 1996 PLAN:

- (U) ($30) Provide program and logistic support for MACS.
- (U) ($138) Complete Contract Specifications and Statement of Work for MACS.
- (U) ($95) Complete documentation of APOBS to transition to Production.

4. (U) FY 1997 PLAN:

- (U) ($53) Conduct configuration analysis for follow-on vehicle configurations for MACS.
- (U) ($30) Prepare documentation and support of program.
- (U) ($40) Perform modification to production specifications drawings and Statement of Work.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	2,204	440	N/A	N/A
(U) FY 1995 Appropriated:	N/A	440	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUD:	+455	-20	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	2,659	420	263	123

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 funding was increased by $455 to complete the APOBS reliability and enhancement program. FY 1995 funding was decreased by a total of $20 for the following undistributed Congressional reductions: Consulting Services, Small Business Innovative Research, and University Research. MACS FY 1995 funding decreased due to an update in pricing; making funding available to conduct APOBS final system flight testing.

(U) Schedule: The APOBS final system flight was delayed to FY 1995 due to a delay in contractor delivery of fuzes. This delay caused the final prototype to slip to FY 1995; Milestone III to move to the fourth quarter of FY 1995; and the production baseline to move to the fourth quarter of FY 1995 vice the second quarter of FY 1995.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		2ND QTR MS I (MACS) 4TH QTR MS III (APOBS)	1ST QTR MS II/III (MACS)		
Engineering Milestones		FINAL PROTOTYPE (APOBS) 4TH QTR PRODUCTION BASELINE (APOBS)			
T&E Milestones		4TH QTR DT/OT II (MACS)			
Contract Milestones				2ND QTR FFP PROD CONTRACT AWARD (APOBS)	

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	1,798	0	0	0
b. Government Engineering Support	300	166	134	25
c. Systems Engineering	75	50	30	50
d. Test and Evaluation	214	105	0	23
e. Technical Data	157	69	75	10
f. Integrated Logistics Support	90	20	19	10
g. Travel	25	10	5	5
Total	2,659	420	263	123

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NSWC (CSS), Panama City, FL	WR/RCP	OCT 93	1,520	1,520	1,279	241	0	0	0	0	1,520
NSWC, Crane, IN	WR	OCT 93	1,614	1,614	1,554	60	0	0	0	0	1,614
NSWC, Indian Head, MD	WR	NOV 93	2,347	2,347	1,940	407	0	0	0	0	2,347
NSWC, Silver Spring, MD	WR	OCT 93	4,922	4,922	4,498	424	0	0	0	0	4,922
NCEL, Port Hueneme, CA	WR	JAN 94	2,871	2,871	2,769	102	0	0	0	0	2,871
Night Vision Electronics Sensors Directorate (NVESD), Ft. Belvoir, VA	MIPR	OCT 93	3,877	3,877	3,547	330	0	0	0	0	3,877
TECOM, Dover, MD	MIPR	DEC 93	2,892	2,892	2,649	93	100	50	0	0	2,892
NATICK, Natick, MA	MIPR	OCT 93	2,803	2,803	2,659	54	40	50	0	0	2,803
MARCORSYSCOM (PM SSE), Quantico, VA	WR	OCT 93	232	232	45	45	50	39	53	0	232
Total Product Development			23,078	23,078	20,940	1,756	190	139	53	0	23,078

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)

PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
NVESD, Ft. Belvoir, VA	MIPR	OCT 93	509	509	200	219	40	50	0	0	509
MKI, Dumfries, VA	RCP	JAN 94	700	700	200	400	50	50	0	0	700
PACER, Panama City, FL	RCP	NOV 93	280	280	160	70	0	24	20	6	280
Total Support and Management			**1,489**	**1,489**	**560**	**689**	**90**	**124**	**20**	**6**	**1,489**
Test and Evaluation											
MCOTEA, Quantico, VA	WR	OCT 93	264	264	10	104	100	0	50	0	264
AVTB, Camp Pendleton, CA	WR	NOV 93	160	160	10	110	40	0	0	0	160
Total Test and Evaluation			**424**	**424**	**20**	**214**	**140**	**0**	**50**	**0**	**424**

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C1969
PROJECT TITLE: Mine Neutralization Equipment

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	20,940	1,756	190	139	53	0	23,078
Subtotal Support and Management	560	689	90	124	20	6	1,489
Subtotal Test and Evaluation	20	214	140	0	50	0	424
Total Project	21,520	2,659	420	263	123	6	24,991

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine/Countermeasures (Engineering and Manufacturing Development)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C2106 Advanced Countermeasures System (ACS)	0	0	0	2,791	3,130	3,473	6,285	1,913	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project was formerly titled Distributed Explosive Mine Neutralization System (DEMNS). This program centers on neutralization of blast-hardened and complex-fuzed mines, and unexploded munitions (current and future threat) that defeat the effectiveness of current minefield breaching systems. Primary goals are: neutralization in-stride from a standoff position; very high neutralization percentages against all types of mines; and joint applicability for use with primary assault platforms to include land and amphibious assaults. This is a joint Army/Marine Corps program with the Army as the lead service satisfying their Standoff Minefield Breacher requirement.

(U) The ACS program researches and develops assault minefield breaching capabilities that will neutralize current and future blast-hardened and complex-fuzed mines from a standoff position. ACS will alleviate a critical deficiency in breaching minefields during amphibious operations. Current breaching assets are 1950s technology that do not meet breaching mission requirements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: FY 1994 funding is contained in two PEs: $1,413 is contained in PE 0603640M, Marine Corps Advanced Technology Demonstrations (ATD), Project C2223, the consolidated Marine Corps ATD project and $645 in PE 0603612M, Marine Corps Mine Countermeasures, Project C2106.

2. (U) FY 1995 PLAN: FY 1995 funding ($6,434) is contained in PE 0603612M, Project C2106.

3. (U) FY 1996 PLAN: FY 1996 funding ($2,470) is contained in PE 0603612M, Project C2106.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine/Countermeasures (Engineering and Manufacturing Development)

4. (U) FY 1997 PLAN:

- (U) ($1,985) Complete the Demonstration/Validation (DEM/VAL) contract to include contractor testing of prototype systems and ammunition. Support government developmental and operational tests and delivery of three systems and fifteen rounds of ammunition.
- (U) ($230) Update all program documentation for the milestone decision and provide management support analysis of contractor results using a management support contract.
- (U) ($576) Continue to provide Army, Navy, and government laboratory salaries. Continue to provide travel support in preparation of milestone documentation and contract deliverables. Execute government testing and final reports to support Milestone II.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering) PROJECT NUMBER: C2106 PROJECT TITLE: Advanced Countermeasures System (ACS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	0	0	N/A	N/A
(U) FY 1995 Appropriated:	N/A	0	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	0	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	0	0	0	2,791

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Joint program efforts with the Army resulted in RDT&E (Navy) savings in FY 1996 and FY 1997. This program transitioned from PE 0603612M, Project C2106 at the end of FY 1996.

(U) Schedule: Scheduling changes are addressed in PE 0603612M, Project C2106.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0603606A/0603619A/0604080A (Army Standoff Minefield Breacher Program)
(U) PE 0603612M (Marine Corps Mine Countermeasures)
(U) PE 0603640M (Marine Corps Advanced Technology Demonstrations)
(U) The joint Memorandum of Agreement between the Army and Marine Corps is pending final signature.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C2106
PROJECT TITLE: Advanced Countermeasures System (ACS)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones				4Q MS II	4Q FY 2001 MS III
Engineering Milestones				1Q PROTOTYPE DELIVERED	4Q FY 2000 LRIP DECISION
T&E Milestones				2Q EDT DT/OT I	1Q FY 2001 IOT&E
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering) PROJECT NUMBER: C2106 PROJECT TITLE: Advanced Countermeasures System (ACS)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Program Manager Civilian Salaries	0	0	0	780
b. Travel	0	0	0	20
c. Professional and Management Service	0	0	0	320
d. Hardware Development	0	0	0	915
e. Software Development	0	0	0	50
f. Systems Engineering	0	0	0	300
g. Integrated Logistics Support	0	0	0	30
h. Govt Engineer Support	0	0	0	30
i. Operational Test and Evaluation	0	0	0	0
j. Developmental Test and Evaluation	0	0	0	300
k. Miscellaneous	0	0	0	46
Total	0	0	0	2,791

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)
PROJECT NUMBER: C2106
PROJECT TITLE: Advanced Countermeasures System (ACS)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
TBD	C/CPIF/MIPR	JAN 95			0	0	0	0	1,313	CONT.	CONT.
Support and Management											
Night Vision Electronics Sensors Directorate (NVESD), Ft. Belvoir, VA											
	MIPR	OCT 94			0	0	0	0	230	CONT.	CONT.
CAMBER CONTR		OCT 94			0	0	0	0	800	CONT.	CONT.
Test and Evaluation											
Miscellaneous					0	0	0	0	448	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)

PROJECT NUMBER: C2106 PROJECT TITLE: Advanced Countermeasures System (ACS)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	0	1,313	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	1,030	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	448	CONT.	CONT.
Total Project	0	0	0	0	2,791	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2137 JDAM	8,394	25,860	37,832	36,576	12,806	7,759	9,318	15,356	0	177,098

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: JDAM is a joint acquisition program combining Department of Navy and Air Force requirements for upgrading existing General Purpose Bomb capabilities in adverse weather and medium to high altitude releases. The Air Force is the executive service. The Navy's participation in JDAM involves joint development of JDAM components and support of Navy-Marine Corps unique requirements such as aircraft integration on the F/A-18. JDAM will provide an accurate (defined as not more than 13 meters) adverse weather capability. The program will incorporate commonality with the Joint Standoff Weapon where feasible. The JDAM Product Improvement Program (PIP) will field improvements to the JDAM system with initial emphasis on attaining precision (3 meters or less) accuracy through non-seeker and seeker initiatives.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENT:

- (U) ($ 3,053) Supported two JDAM-1 Demonstration and Validation (DEMVAL) contracts.
- (U) ($ 3,100) Performed systems engineering to develop JDAM F/A-18 Operational Flight Program (OFP) software.
- (U) ($ 1,741) Conducted JDAM-1 F/A-18 wind tunnel tests, and airworthiness analysis.
- (U) ($ 500) Supported USAF Engineering and Manufacturing Development (E&MD) contract for Joint Programmable Fuze (JPF).

FY1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM) PROJECT TITLE: JDAM

2. (U) FY 1995 PLAN:

- (U) ($10,811) Continue to support two JDAM-1 DEMVAL contracts and prepare for joint MS II decision.
- (U) ($11,473) Continue systems engineering for F/A-18 integration, OFP software development, and airworthiness certification.
- (U) ($ 1,480) Initiated Tactical Air Mission Planning System (TAMPS) software development.
- (U) ($ 596) Continue to support USAF E&MD contract for JPF.
- (U) ($ 1,500) FMU-143 Fuze Improvement.

3. (U) FY 1996 PLAN:

- (U) ($10,490) Perform DT-IIA Testing and engineering support.
- (U) ($ 3,000) Continue F/A-18 OFP software development for DT-IIB testing.
- (U) ($12,845) Procure JDAM Test Assets and continue TAMPS software development.
- (U) ($ 9,227) Perform systems engineering and support EMD Phase II contract.
- (U) ($ 2,270) Support JPF Testing.

4. (U) FY 1997 PLAN:

- (U) ($13,662) Perform system engineering for DT-IIA/B, OFP software development, and OT-IIA/B.
- (U) ($10,083) Continue to procure JDAM Test Assets and TAMPS software development.

FY1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM) PROJECT TITLE: JDAM

- (U) ($10,561) Support EMD Phase II Contract and prepare for LRIP decision.
- (U) ($ 2,270) Continue to support JPF testing.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	9,893	25,173	XXX	XXX
(U) FY 1995 Appropriated:	XXX	26,673	XXX	XXX
(U) Adjustments from Appropriated PRESBUDG:	(-)1,499	(-)813	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	8,394	25,860	37,832	36,576

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY94 reduction of $1,499K reflects the rephasing of funding to conform with actual execution. The FY95 reduction of $ 813K reflects the allocation of undistributed adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM) PROJECT TITLE: JDAM

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN/B.A-5 - Ammunition - General Purpose Bombs	-	-	-	-	41,127	47,711	39,442	33,172	709,648	871,100
MPAF/B.A-2 - Other Missiles	-	-	-	-	64,500	66,400	154,200	249,600	2,639,100	3,173,800

(U) RELATED RDT&E:

(U) PE 0604618F (Air Force Joint Direct Attack Munitions).

D. (U) SCHEDULE PROFILE:

Program	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Milestones		1Q/94 MS-I		1Q/96 MS-II	4Q/99 MS-III
Engineering Milestones		1Q PDR 4Q CDR			
T&E Milestones			1Q DT-IIA 3Q DT-IIB	3Q OT-IIA	1Q/98 OT-IIB
Contract Milestones	E&MD PHASE I 2Q		1Q DOWNSELECT		

FY1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM)

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Engineering	3,238	6,367	7,376	13,111
b. Training Development	135	265	211	415
c. Integrated Logistics Support	910	663	672	803
d. Contractor Engineering Support	861	2,319	2,289	2,496
e. Travel	150	384	284	292
f. Airworthiness	1,500	2,766	665	0
g. Development Test & Evaluation	600	6,116	10,490	7,106
h. Operational Test & Evaluation	0	0	0	1,150
i. Test Asset Hardware	0	189	10,851	7,081
j. OFP Software Dev.	1,000	4,000	3,000	700
k. TAMPS (Software)	0	1,291	1,994	3,422
l. Fuze Improvement		1,500		
TOTAL	8,394	25,860	37,832	36,576

FY1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N

PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM)

PROJECT NUMBER: E2137

PROJECT TITLE: JDAM

(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Contract Costs ($1.0M or more):											
OFP Software Dev.	WX	10/95	12,167	12,167	4,167	1,000	4,000	3,000	0	0	12,167
JDAM (Software Dev) (TAMPS)	WX	10/95					1,291	1,994	3,422	0	6,707
Less than $1.0M (Aggregate Total):											
OFP Software Dev.	WX		760	760					700	60	760
In-house Support:											
NAWC, CL JDAM DEV.	WX	10/95			14,063	4,283	8,795	8,259	14,329	42,602	92,331
Support and Management:											
Less than $1.0M (Aggregate Total):					2,382	1,011	2,703	2,573	2,788	1,302	12,759

FY1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM)

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation:											
A/C Integration (McDonnell Douglas, St.Louis, MO)	C/FP	1/94	31,782	31,782	0	2,100	8,882	11,155	8,256	1,275	31,668

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0	0
Support and Management				0	0	0	0	0	0	0
Test and Evaluation:										
Test Asset	C/FP MIPR	10/95	Oct 96 - Mar 98	2,585	-	189	10,851	7,081	0	20,706

FY1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions (JDAM)

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	18,230	5,283	14,086	13,253	18,451	42,662	111 5
Subtotal Support and Management	2,382	1,011	2,703	2,573	2,788	1,302	12,759
Subtotal Test and Evaluation	2,585	2,100	9,071	22,006	15,337	1,275	52,374
Total Project	23,197	8,394	25,860	37,832	36,576	45,239	177,098

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604654N
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q1829 Explosive Ordnance Disposal Procedures										
	6,196	6,242	5,408	5,221	5,396	6,527	6,578	6,776	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This is a Joint Service Program. DOD assigned development responsibility for Explosive Ordnance Disposal (EOD) procedures and equipment to the Navy in support of the Joint Services. This program provides for the technical development, validation, preparation, joint service verification and approval of EOD render-safe procedures for all known domestic and foreign conventional and nuclear ordnance. This program also provides for the implementation of the

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($4,746) Obtained foreign ordnance and developed EOD render-safe procedures for new sophisticated domestic and foreign ordnance.
- (U) ($1,305) Continued development of specialized tools and equipment and countermeasures procedures to access and disable
- (U) ($145) Coordinated and participated in exercises to prove concepts and procedures.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

2. (U) FY 1995 PLAN:

- (U) ($4,900) Continue to obtain foreign ordnance and develop EOD render-safe procedures for additional domestic and foreign ordnance.
- (U) ($1,342) Continue to develop procedures and participate in joint exercises and joint working groups.

3. (U) FY 1996 PLAN:

- (U) ($4,330) Continue to obtain foreign ordnance and develop EOD render-safe procedures for additional domestic and foreign ordnance.
- (U) ($1,078) Continue to develop procedures and participate in exercises and joint working groups.

4. (U) FY 1997 PLAN:

- (U) ($4,180) Continue to obtain foreign ordnance and develop EOD render-safe procedures for additional domestic and foreign ordnance.
- (U) ($1,041) Continue to develop procedures and participate in exercises and joint working groups.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	6,196	6,273	XXX	XXX
(U) FY 1995 Appropriated:	XXX	6,273	XXX	XXX
(U) Adjustments from Approp/FY95 PRESBUDG:	0	-31	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	6,196	6,242	5,408	5,221

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95 - (-$10)Univeristy research,(-$8) Travel,(-$13) SBIR.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: All conventional or nuclear ordnance related developments, both domestic and foreign, manufactured or improvised.

(U) 0603654N (Joint Service Explosive Ordnance Disposal Development)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

D. (U) SCHEDULE PROFILE: This project is designated as a non-acquisition program and CNO approved NAPDD 301-03 applies. Render-safe procedures (RSPs) for domestic ordnance must be available 30 days prior to fielding of the ordnance. RSPs for foreign ordnance must be developed as soon as possible after gaining knowledge of its existence. As many as 130 new RSPs are developed and delivered in a fiscal year.

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	Numerous RSP efforts are documented in individual POA&M for each effort.				CONT.
Engineering Milestones	Numerous RSP efforts are documented in individual POA&M for each effort.				CONT.
T&E Milestones	Validation and verification testing is conducted for each RSP effort.				CONT.
Contract Milestones	Not applicable.				

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. RSP Development	4,746	4,900	4,330	4,180
b.	1,450	1,342	1,078	1,041
Total	6,196	6,242	5,408	5,221

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAVEODTECHDIV	ALLOT	VARIOUS	CONT.	CONT.	117,632	6,196	6,242	5,408	5,221	CONT.	CONT.
Support and Management											
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	117,632	6,196	6,242	5,408	5,221	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	117,632	6,196	6,242	5,408	5,221	CONT.	CONT.

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BUDGET ACTIVITY: 5

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

PROGRAM ELEMENT: 0604703N

PROGRAM ELEMENT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

DATE: February 1995

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
L1822 Manpower, Personnel, Training, Simulation and Human Factors	1,057	1,117	1,043	1,040	1,061	1,315	1,326	1,364	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program applies advanced technologies to operational requirements in manpower, personnel, training, and human factors, and transitions into operation those projects demonstrated in advanced development. Enabling technologies include adaptive testing, math optimization, statistical and econometric forecasting, computer-based simulation, and decision support systems.

C. (U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RDT&E OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($150) Completed MORA prototype validation on USS Coronado.
- (U) ($288) Completed transition of Officer Community Management System to LAN operation.
- (U) ($300) Expanded the Navy "C" School Planning System to permit feasibility analyses based on school capacities and to estimate permanent change of station costs of training plans.
- (U) ($150) Began development of the Enlisted Loss Incentive Planning System.

- (U) ($169) Refined the Job Performance Equations for the Personnel Quality Requirements System, to permit cost/performance tradeoff analyses.

2. (U) FY 1995 PLANS:

- (U) ($300) Transition prototype version of unrestricted line officer career management model to other officer communities and integrate with officer strength planning and promotion planning systems.
- (U) ($381) Extend "C" School Planning System to "A" Schools and expand both to estimate effects of training on fleet readiness.
- (U) ($170) Begin evaluation and expansion of the Brig Retraining System.
- (U) ($266) Transition to officer communities the Target System, for defining loss incentive populations.

3. (U) FY 1996 PLANS:

- (U) ($350) Implement the C and A School Planning Systems to permit feasibility analyses based on school capacities and to estimate PCS moves costs of training plans.
- (U) ($143) Test and refine the QOL socioeconomic model to predict increases/decreases in retention and readiness in response to varying levels of QOL support.
- (U) ($250) Transition the Future Generation Decision Support System for detailers to operation by completing an intelligent interface for accessing multiple assignment information systems.
- (U) ($100) Begin conversion of demonstration manpower allocation model to an all-Navy model.
- (U) ($100) Complete implementation of the Enlisted Community Managers' Integrated modeling system, developed in advanced technology demonstration.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 6 PROGRAM ELEMENT: 0604703N PROJECT NUMBER: L1822
PROGRAM ELEMENT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors PROJECT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

- (U) ($100) Develop common strength plan costing system for Pers-2 and Pers-7 to ensure personnel policies implemented are consistent with dollars available.

4. (U) FY 1997 PLANS:

- (U) ($320) Enhance Future Generation Decision Support System for Detailers with integrated information display in Windows-like environment, to improve detailer response to constituents.
- (U) ($300) Expand the Assignment Policy Management System to allow the advertisement of job vacancies to the fleet. Transition the Assignment Policy Execution System into operational status--measures policy compliance and suggests corrective actions.
- (U) ($220) Complete conversion of demonstration manpower allocation model to an all-Navy model and transition to implementation at NAVMAC, N932 and BUMED.
- (U) ($200) Implement the Accession Management Decision Support System that integrates the management of recruiting, delayed entry program, enlistment incentives, initial skill training and enlisted strength planning.

(U) RELATED RDT&E:

(U) PE 0601152N, In-House Independent Lab Research
(U) PE 0601153N, Defense Research Sciences
(U) PE 0602233N, Mission Support Technology
(U) PE 0602722A, Personnel and Training
(U) PE 0603707N, Manpower, Personnel and Training Advanced Technology Development
(U) PE 0603731A, Manpower and Personnel
(U) PE 0603704F, Manpower and Personnel Systems Technology

(U) OTHER RDT&E FUNDS: Not Applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

PROGRAM ELEMENT: 0604703N
PROJECT NUMBER: L1822
PROJECT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	1,057	1,136	[redacted]	[redacted]
(U) FY 1995 Appropriated:	--	1,136		
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-0	-19		
(U) FY 1996/97 PRESBUDG Submit: (PRESBUDG CONTROLS)	1,057	1,117	1,043	1,040

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY95 reductions due to Congressional undistributed cuts and SBIR assessment.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

Exhibit R-2

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604710N
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG)

A. (U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0371 Energy Conservation (ENG)	3,100	3,156	2,628	2,557	2,241	2,686	2,713	2,801	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Develop energy-efficient systems and practices for ships, facilities, and aircraft. Resulting energy efficiency gains contribute to fleet sustainability, combat capability (e.g., greater range, time on station), and reduced operating costs. Efforts include fuel use optimization aids for aircraft; anti-fouling paints, air conditioning and lighting for ships; adaption of commercially available energy conservation and renewable energy technologies to Navy facility needs. Provide test and evaluation support to the companion PE 0603724N Project R0829. As currently funded, annual savings for the combined 6.3/6.4 program are projected to be $130M by FY 1995 and $155M by FY 2000 compared to FY 1985 cost.

This program, and the companion PE 0603724N Navy Energy Program (ADV), support the achievement of Executive Department, DoD, and Navy Energy Management Goals enunciated in the Defense Energy Policy Memorandum 91-2 of May 91, OPNAV Instruction 4100.5D of Apr 94, the 1992 Energy Policy Act, Executive Order 12902 of March 94. Navy is TRISERVICE lead for the implementation of renewable/alternative energy systems across DoD.

Joint Mission Areas/Support Areas (JMA/SA): This program directly supports the Readiness, Support, and Infrastructure SA. It also supports the following JMA's: Forward Presence, Joint Surveillance, Strategic Sealift, and Joint Strike.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:
   - (U) ($748) Aircraft: Tested and evaluated (T&E) enhanced Flight Optimization Routines for Energy Management (FOREM) for F/A-18 (-400 engine), F-14A, A-6E, EA-6B and distributed to fleet. Developed FOREM for F/A-18 (-402 engine), F-14B/D, and TA-4J. T&E Pocket-Sized Aircraft Performance Advisory Computer (P-S APAC) for C-9B and

distributed to fleet. Enhanced P-S APAC for C-2A and KC-130 as requested by fleet. T&E Flight Performance Advisory System (FPAS) for F/A-18C/D (-402 engine).

- (U) ($1,317) Ships: Completed SHIPEVAL of alternating current lighting system with integral emergency ballasts. Optimized design of centrifugal compressor for HFC-134a refrigerant; completed evaluation of HCFC-124 and initiated equipment modifications to allow retrofit. Expanded anti-fouling (AF) coating ship trials to include silicone "easy release" products.
- (U) ($1,035) Facilities: T&E photovoltaic (PV)/hybrid power systems at four large sites. Provided technical support to 10 MILCON PV power system projects. Field tested pierside power metering/power demand control techniques applications.

2. (U) FY 1995 PLAN:
   - (U) ($750) Aircraft: T&E FOREM for F/A-18 (-402 engine), F-14B/D, and T-45; distribute to fleet. Develop FOREM for P-3C and T-45, T&E P-S APAC for C-2A and KC-130 and distribute.
   - (U) ($1,277) Ships: Assess relative merits of ozone safe refrigerants and select candidates for forward fit airconditioning. Prepare detailed design packages for back-fit of ozone-safe refrigerant. Complete MILSPEC for high efficiency lighting with integral emergency ballast. Continue full-scale ship trials of promising non-toxic AF coatings.
   - (U) ($1,129) Facilities: T&E PV systems for peak shedding and distributed load center applications. Continue technical support to 10 Renewable Energy MILCON installations as lead service. Field test geothermal heat pumps and electrical conservation technologies identified in category 6.4 project. Issue design guidance and guide specifications for large PV hybrid and PV grid support/island grid systems.

3. (U) FY 1996 PLAN:
   - (U) ($700) Aircraft: Develop FOREM for KC-130; transition to fleet for P-3C and AVT-8B; incorporate fleet requested enhancements for other aircraft. Extend FPAS to F/A-18E/F. Upgrade P-S APAC with new DOS compatible palm-top computer capable of using FOREM flight optimization coding.
   - (U) ($1,284) Ships: T&E energy efficient air conditioning (with ozone-safe refrigerants) for new construction. Continue ship trials of "easy release" and biodegradable AF coatings.
   - (U) ($644) Facilities: Complete clean steam operational testing. Complete geothermal resource assessments at China Lake and Fallon. T&E integrated wind/PV hybrid power system.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

4. (U) FY 1997 PLAN:
   - (U) ($700) Aircraft: Deliver FOREM for KC-130 to fleet, complete extension to additional aircraft. Complete upgrade of P-S APAC system via computer replacement and use of FOREM software. Retain P-S APAC unique capabilities: weight/balance calculations, real-time update for fuel quantity, dropped stores, engine out, and wind changes.
   - (U) ($1,277) Ships: T&E stern wedge/flap for DDG-993/CG-47. SHIPEVAL direct current fluorescent lighting. Continue air conditioning T&E and advanced AF coating ship trials. T&E efficiency improvement for LM 2500 engine and power train.
   - (U) ($580) Facilities: T&E advanced PV systems incorporating thin film receptors and ganged, parallel, processors/controllers. Demonstrate centralized ground source heat pumps for heating/cooling base housing. T&E solar thermal electric system.

B. (U) PROGRAM CHANGE SUMMARY

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	3,101	3,165	XXX	XXX
(U) FY 1995 Appropriated:	XXX	3,165	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-1	-9	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	3,100	3,156	2,628	2,557

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 funding reduction is due to end of year execution update (-1). FY 1995 funding reduction is due to undistributed congressional cuts for university research (-5) and travel (-4).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

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

(U) RELATED RDT&E:

- (U) PE 0601153N (Defense Research Sciences)
- (U) PE 0602121N (Surface Ship and Submarine HM&E Technology)
- (U) PE 0602122N (Aircraft Technology)
- (U) PE 0602234N (Materials, Electronics, and Computer Technology)
- (U) PE 0603508N (Ship and Submarine HM&E Advanced Technology)
- (U) PE 0603712N (Environmental Quality and Logistics Advanced Technology)
- (U) PE 0603724N (Navy Energy Program (ADV))
- (U) This program is also relates to two OSD managed TRISERVICE energy conservation programs: Energy Conservation Investment Program (ECIP) and the Federal Energy Management Program (FEMP).

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1996
a. Engineering Development & Testing	3,100	3,156	2,628	2,557
Total	3,100	3,156	2,628	2,557

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION: ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NSWC, Annapolis	WR	N/A	N/A	N/A	41,240	1,318	1,268	1,284	1,277	Cont.	Cont.
NAWCAD, Warminstr	WR	N/A	N/A	N/A	31,998	748	750	700	700	Cont.	Cont.
Miscellaneous					30,396	1,034	1,138	644	580	Cont.	Cont.

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	103,634	3,100	3,156	2,628	2,557	Cont.	Cont.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	103,634	3,100	3,156	2,628	2,557	Cont.	Cont.

C. (U) FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/Communications Systems

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C0053 Joint Tactical Information Distribution System (JTIDS)	5,827	3,431	3,612	3,556	3,797	3,781	2,131	2,114	CONT.	CONT.
C1929 Advanced Tactical Air Command Central (ATACC)	6,486	2,081	8,088	5,378	9,615	4,843	2,510	3,759	CONT.	CONT.
C2085 Advanced Field Artillery Tactical Data System (AFATDS)	8,843	4,738	3,680	3,341	3,702	3,231	3,237	3,427	CONT.	CONT.
C2254 Coastal Battlefield Reconnaissance and Analysis (COBRA)[1]	0	0	0	0	0	3,064	4,973	4,973	CONT.	CONT.
TOTAL	21,156	10,250	15,380	12,275	17,114	14,919	12,941	14,273	CONT.	CONT.

1. FY 1994 through FY 1995 funding is contained in Program Element (PE) 0603640M, Marine Corps Advanced Technology Demonstrations (ATD), Project C2223, the consolidated Marine Corps ATD project. FY 1996 funding is split between two PEs: $1,935 is contained in Project C2223 under PE 0603640M and $3,819 is contained in PE 0603635M, Marine Corps Ground Combat/Support System, Project C2247, COBRA. FY 1997 through FY 1998 funding is contained in PE 0603635M, Project C2247. FY 1999 through FY 2001 funding is contained in this PE, Project C2254.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE provides funds for the engineering development of Marine Corps Command, Control, and Communications Systems which include Marine Tactical Command and Control Systems development and improvements. The projects are aimed toward more effective command and control of tactical forces during both amphibious and expeditionary land operations. This concept envisions an integrated air/ground tactical command and control system oriented towards amphibious expeditionary environments to meet unique command, control and interoperability requirements of the Landing Force Commanders.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/Communications Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C0053 Joint Tactical Information Distribution System (JTIDS)	5,827	3,431	3,612	3,556	3,797	3,781	2,131	2,114	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: JTIDS integrates the high capacity, jam resistant, secure, digital communications capability provided by the JTIDS Class 2/2H terminal into the Radio Terminal Set AN/TSC-131 (JTIDS Module). The JTIDS Module (JM) will in turn be used as part of the AN/TYQ-23 Tactical Air Operations Module (TAOM) Joint Tactical Information Distribution System/Tactical Air Data Information Link-Joint (JTIDS/TADIL-J) integration program. JTIDS also provides engineering and technical assistance to the JTIDS/TADIL-J integration programs for the AN/TYQ-51 Advanced Tactical Air Command Central (ATACC) and Air Defense Communications Platform.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,959) Continued development of the JM.
- (U) ($1,698) Began integration of JTIDS/TADIL-J into the TAOM.
- (U) ($120) Provided interim JTIDS capability to the fleet.
- (U) ($50) Provided support for Class 2H Full Scale Development Terminals which will be used in JM and JTIDS interface box (JIB) integration into TAOM.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

2. (U) FY 1995 PLAN:

- (U) ($100) Provide pre-operations support of Class 2H Full Scale Development Terminals which will be used in JM/JIB integration into TAOM.
- (U) ($300) Provide pre-operations support for the Class 2 Terminals used in the development of the Shelterized JTIDS System (SJS).
- (U) ($2,193) Continue testing of JM Engineering and Manufacturing Development (EMD) Models #1-4. Perform Test Readiness Review (TRR) in anticipation of Formal Qualifications Testing (FQT). Perform JM Maintainability Demonstration.
- (U) ($838) Continue integration of JTIDS/TADIL-J into TAOM.

3. (U) FY 1996 PLAN:

- (U) ($2,021) Complete first article testing of JM EMD Models and commence delivery of product improvements to the JM EMD Models #1-4. Anticipate MS III approval.
- (U) ($200) Continue EMD shelter, software testing and integration of the SJS.
- (U) ($100) Provide pre-operations support for the Class 2H Full Scale Development Terminals which will be used in JM/JIB integration into TAOM.
- (U) ($100) Provide pre-operations support for the Class 2 Terminals used in the development of the SJS.
- (U) ($1,191) Continue integration of JTIDS/TADIL-J into TAOM and the ATACC.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C0053 PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

4. (U) FY 1997 PLAN:

- (U) ($1,170) Complete delivery of JM EMD #1-4, and continue product improvements to the JM. Achieve Initial Operating Capability (IOC).
- (U) ($200) Continue development, software testing and integration of the SJS.
- (U) ($100) Continue pre-operations support for the Class 2 Terminals used in the development of the SJS.
- (U) ($100) Provide pre-operations support for the Class 2H Full Scale Development Terminals which will be used in JM/JIB integration into TAOM.
- (U) ($1,986) Continue integration of the JMs to be used in the TAOM and ATACC TADIL-J integration.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C0053 PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,966	3,766	N/A	N/A
(U) FY 1995 Appropriated:	N/A	3,766	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-139	-335	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	5,827	3,431	3,612	3,556

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 funding was decreased by $139 due to end-of-year execution. FY 1995 funding was decreased by a total of $335 for the following undistributed Congressional reductions: Consulting Services, Small Business Innovative Research, University Research, and Travel.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) PMC (BLI# 421300) JTIDS Integration	1,403	8,743	5,375	5,780	2,214	0	0	0	0	23,515

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C0053 PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

(U) RELATED RDT&E:

(U) PE 0604771D and 0604754F (MCE-P3I Joint Program). The Marine Corps is the lead service for development of the Joint TAOM.
(U) PE 0604719M, Project C1929, Advanced Tactical Air Command Central (ATACC)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones			3Q JM MS III	4Q JM IOC	
Engineering Milestones					
T&E Milestones		3Q JM FQT	2Q JM FAT	2Q JM IOT&E	
Contract Milestones		2Q JMTRR 4Q JM M-DEMO			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C0053 PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY1995	FY1996	FY1997
a. Primary Hardware Development	2,334	1,040	935	820
b. Software Development	1,887	838	1,176	1,986
c. Development, Test, & Evaluation	505	875	301	0
d. Program Management Support	1,101	678	1,200	750
Total	5,827	3,431	3,612	3,556

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
ELDYNE											
San Diego, CA	T&M	FEB 90	5,678	5,678	3,687	1,203	78	375	335	0	5,678
LITTON											
Augora Hill, CA	CPFF	OCT 88	11,807	11,807	5,920	1,887	838	1,176	1,986	0	11,807
SM-ALC											
Sacramento, CA	MIPR	OCT 91	2,158	2,158	2,158	0	0	0	0	0	2,158
SM-ALC											
Sacramento, CA	MIPR	OCT 93	296	296	0	74	222	0	0	0	296
NISE WEST											
San Francisco, CA	WR	OCT 90	3,559	3,559	1,652	977	455	275	200	0	3,559
MITRE											
Bedford, MS	CPFF	JUN 93	1,395	1,395	160	80	185	185	185	600	1,395
GEC											
Totowa, NJ	FFP	JAN 94	600	600	0	0	100	100	100	300	600
GSA/COL ENG											
San Francisco, CA	FFP	JAN 92	161	161	161	0	0	0	0	0	161
ELDYNE											
San Diego, CA	FFP	JUN 92	50	50	50	0	0	0	0	0	50

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
MADENTECH											
Arlington, VA	CPFF	FEB 89	10,339	10,339	5,575	821	352	850	515	2,226	10,339
LOGICON											
Dumfries, VA	CPFF	OCT 90	71	71	71	0	0	0	0	0	71
CALCULON											
Arlington, VA	CPFF	OCT 87	87	87	87	0	0	0	0	0	87
GEC Totowa, NJ	FFP	OCT 91	1,093	1,093	593	50	100	100	100	150	1,093
MCTSSA											
Camp Pen., CA	WR	OCT 90	907	907	667	90	0	100	50	0	907
TRANDES/NSR											
Camp Pen., CA	CPFF	OCT 90	1,145	1,145	879	66	50	100	50	0	1,145
TRANDES/NSR											
Camp Pen., CA	CPFF	SEP 94	0	0	0	0	0	0	0	0	0
NRAD											
San Diego, CA	WR	JUN 92	80	80	5	0	75	0	0	0	80
TAD	WR	OCT 90	814	814	494	74	101	50	35	60	814

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation											
NRAD											
San Diego, CA	WR	JUN 93	325	325	41	165	119	0	0	0	325
DIGITAL WIZARDS											
San Diego, CA	CPFF	MAR 94	237	237	0	237	0	0	0	0	237
CTSA ABERDEEN, MD	MIPR	OCT 92	134	134	12	30	92	0	0	0	134
NISE EAST											
San Diego, CA	WR	OCT 94	50	50	0	0	50	0	0	0	50
MCTSSA											
Camp Pen., CA	WR	FEB 94	194	194	0	10	184	0	0	0	194
SM-ALC											
Sacramento, CA	MIPR	OCT 95	164	164	0	63	0	101	0	0	164
NISE WEST											
San Francisco, CA	WR	OCT 94	320	320	0	0	120	200	0	0	320
ELDYNE											
San Diego, CA	T&M	OCT 95	310	310	0	0	310	0	0	0	310

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
GEC-TERMINALS	FFP	OCT 90	JUL 92	6,785	0	0	0	0	0	6,785
ALL OTHER GFP	MIPR	OCT 90	JUL 92	297	169	0	0	0	0	466

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROJECT NUMBER: C0053
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT TITLE: Joint Tactical Information Distribution System (JTIDS)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	14,085	4,221	1,878	2,111	2,806	900	26,001
Subtotal Support and Management	8,371	1,101	678	1,200	750	2,436	14,536
Subtotal Test and Evaluation	53	505	875	301	0	0	1,734
Total Project	22,509	5,827	3,431	3,612	3,556	3,336	42,271

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/Communications Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1929 Advanced Tactical Air Command Central (ATACC)	6,486	2,081	8,088	5,378	9,615	4,843	2,510	3,759	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ATACC will integrate hardware and software into a replacement system, capable of overcoming the current operational deficiencies of the AN/TYQ-1 Tactical Air Command Central (TACC), and the AN/TYQ-3A Tactical Data Communications Central. The system will automate and enhance the now manual decision support/mission planning functions of the TACC. Additionally, the ATACC will provide increased interoperability through the integration of Joint Tactical Information Distribution System/Tactical Air Data Link-Joint (JTIDS/TADIL-J), and automate Joint Interoperability of Tactical Communications Systems (JINTACCS) message receipt and origination.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($720) Commenced development of shelter reconfiguration necessary due to the results of Operational Test and Evaluation (OT&E) (Phase I).
- (U) ($2,663) Commenced development of Performance Enhancements due to new (March 94) Operational Requirements Document (ORD).
- (U) ($1,489) Commenced extensive evaluation of Air Force Contingency Theater Automated Planning System (CTAPS) for use in ATACC (Phase I).
- (U) ($904) Provided updates and enhancements to ATACC software to address OT&E Results and enhanced functionality required by the new (March 94) ATACC ORD (Phase I).
- (U) ($710) Management and contract support services (Phase I and II).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

2. (U) FY 1995 PLAN:

- (U) ($441) Continue development of Performance enhancements defined in March 94 ORD (Phase II).
- (U) ($250) Provide updates and enhancements to Software to address OT&E results and enhanced functionality required by new ORD (Phase I).
- (U) ($729) Complete extensive evaluation of Air Force Contingency Theater Automated Planning System (Phase I).
- (U) ($661) Management and contract support services (Phase I and II).

3. (U) FY 1996 PLAN:

- (U) ($1,288) Migration of TADIL A, B, and NATO Link-1 to Global Command and Control System (GCCS) direction for open systems conversion (Phase II).
- (U) ($2,000) Award contract for voice communications distribution system development.
- (U) ($4,000) Initiate efforts for development of JTIDS software integration required to maintain joint interoperability for Marine aviation command and control (Phase II).
- (U) ($800) Management and contract support services required to reduce risk of managing diverse efforts (Phase I and II).

4. (U) FY 1997 PLAN:

- (U) ($578) Complete TADIL A, B, and NATO Link-1 conversion to GCCS midterm by joint direction for open systems conversion (Phase II).
- (U) ($2,000) Continue efforts for development of receive-only TADIL-J software integration required to maintain joint interoperability for Marine aviation command and control (Phase II).
- (U) ($2,000) Complete development of voice communication upgrade, including construction and test.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

- (U) ($800) Management and contract support services required to reduce risk of managing diverse efforts (Phase II).

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	8,349	2,314	N/A	N/A
(U) FY 1995 Appropriated	N/A	2,341	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-1,863	-233	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	6,486	2,081	8,088	5,378

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 funding was decreased for end-of-year execution adjustments. FY 1995 funding was decreased by a total of $233 for the following undistributed Congressional reductions: Consulting Services, Small Business Innovative Research, University Research, and Travel.

(U) Schedule: As a result of the restructuring noted above, the ATACC program is now following an evolutionary acquisition approach which will progressively field the required capabilities in three phases. Significant revisions in the Phase II ATACC schedule profile reflect the decision of the Command and Control Program Manager to exploit opportunities to use the ATACC program as a vehicle for development of a common voice communications system and a joint-compliant, open systems software implementation which can be re-used in the planned common air command and control system. Additionally, changes in the ATACC Phase I FOT&E schedule have been driven by the Air Force delay in releasing CTAPS software version 5.1.

(U) Technical: The restructured program resolves former deficiencies in performance (identified during IOT&E), and incorporates new joint-directed standards, i.e. CTAPS, open architecture software systems, and TADIL-J/JTIDS.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) PMC (BLI# 459700)	8,319	0	7,214	0	9,763	13,674	13,328	0	CONT.	CONT.
(U) O&MMC	0	0	3,839	3,965	3,966	5,973	6,147	6,327	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0206626M (Marine Corps Command/Control/Communications Systems), Project C1079, Joint Interoperability of Tactical Command and Control Systems (JINTACCS)
(U) PE 0604719M, Project C0053, Joint Tactical Information Distribution System (JTIDS)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	2 QTR MS III	2 QTR MS I (PHASE II)	3 QTR MS III (PHASE I) 3 QTR MS II (PHASE II) 4 QTR VOICE COMM ODR	3 QTR MS III (PHASE II)	CONT.
Engineering Milestones		2 QTR VOICE COMM DESIGN COMPLETE		4 QTR S&E EVAL.	CONT.
T&E Milestones			2 QTR FOT&E (PHASE I)	1 QTR FOT&E (PHASE II)	
Contract Milestones		2 QTR REFURBISHMENT DEFINITIZATION	1 QTR VOICE COMM UPGRADE EDM AWARD		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Shelter and Enclosure Efforts	720	50	0	0
b. Performance Enhancements	2,663	441	0	0
c. Contingency Theater Automated Planning System (CTAPS) Testing	1,489	729	0	0
d. Software Enhancements and Upgrades	904	200	0	0
e. Management Support Services	710	661	800	800
f. Joint Tactical Information Distribution System (JTIDS)	0	0	4,000	2,000
g. Migration GCCS Midterm COE	0	0	1,288	578
h. Voice Command Distribution System	0	0	2,000	2,000
Total	6,486	2,081	8,088	5,378

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Grumman Data Systems Springfield, VA	C/T&M	DEC 88 JUL 94	57,676	57,676	49,900	4,287	691	5,288	2,578	CONT.	CONT.
MCTSSA (CTAPS) Camp Pendelton, CA	WR	OCT 93	2,218	2,218	0	1,489	729	0	0	0	2,218
NCOS, TBD		NOV 95			0	0	0	2,000	2,000	CONT.	CONT.
Support and Management											
CSC/CRC Dumfries, VA	C/T&M	NOV 95			800	710	661	800	800	CONT.	CONT.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C1929 PROJECT TITLE: Advanced Tactical Air Command Central (ATACC)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	49,900	5,776	1,420	7,288	4,578	CONT.	CONT.
Subtotal Support and Management	800	710	661	800	800	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	50,700	6,486	2,081	8,088	5,378	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/Communications Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C2085 Advanced Field Artillery Tactical Data System (AFATDS)	8,843	4,738	3,680	3,341	3,702	3,231	3,327	3,427	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: AFATDS will consist of digital fire support Command and Control automated software, fielded on Marine Corps common hardware. AFATDS will automate for the Marine commander the integration and coordination of supporting arms. AFATDS development is in three versions, each adding new capabilities and refining existing capabilities. The Marine Corps plans to field version 2 software baselined on the Lightweight Computer Unit. The Marine Corps is also working with the Army on the Initial Fire Support Automation System (IFSAS) as a limited initial software capability to be fielded on the same Marine Corps common hardware.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,157) Began alternate communication architecture research and integration of IFSAS with the Marine Air-Ground Task Force (MAGTF) Tactical Net Server (TNS).
- (U) ($3,469) Completed Version 1 software code and conducted Developmental Test and Evaluation (DT&E)/Experimentation of Version 1 software.
- (U) ($4,217) Started Preliminary Design Review of Version 2 software.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems
PROJECT NUMBER: C2085
PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

2. (U) FY 1995 PLAN:

- (U) ($1,985) Prepare for and conduct AFATDS Version 1 Initial Operational Test and Evaluation (IOT&E) and Version 2 software design review.
- (U) ($1,950) Conduct alternate hardware (platform) exploration, especially for the Assault Amphibious Vehicle/Light Armored Vehicle (AAV/LAV).
- (U) ($803) Continue alternate communication architecture research and integration of IFSAS with MAGTF Tactical Net Server.

3. (U) FY 1996 PLAN:

- (U) ($1,100) Complete AFATDS Version 2 software code.
- (U) ($1,500) Participate in IFSAS Version II operational testing.
- (U) ($1,080) Complete IFSAS integration with MAGTF TNS and migration to new hardware.

4. (U) FY 1997 PLAN:

- (U) ($1,666) Prepare for and conduct AFATDS Version 2 operational testing.
- (U) ($600) Transition software development to Fire Support Software Engineering (FSSE).
- (U) ($1,075) Start Preliminary Design Review of Version 3 software.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems
PROJECT NUMBER: C2085
PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	9,404	5,291	N/A	N/A
(U) FY 1995 Appropriated:	N/A	5,291	N/A	N/A
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-561	-553	N/A	N/A
(U) FY 1996/97 PRESBUDG Submit:	8,843	4,738	3,680	3,341

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 funding was decreased by $561 due to End-of-year execution. FY 1995 funding was decreased by a total of $553 for the following undistributed Congressional reductions: Consulting Services, Small Business Innovative Research, University Research, and Travel.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems
PROJECT NUMBER: C2085
PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) PMC Line 56 (BLI# 461100) AFATDS	9,594	5,104	12,140	11,915	0	0	0	0	CONT.	CONT.
(U) O&MMC	0	0	493	636	768	941	978	984	CONT.	CONT.
(U) O&MMCR	0	0	135	220	277	353	364	375	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0206313M (Marine Corps Communications Systems (Operational Systems Product Improvements)), Project C1975, Digital Communication Terminal (DCT)
(U) PE 0203726A (Advanced Field Artillery Tactical Data System), Project D322
(U) PE 0206626M (Marine Corps Command/Control/Communications Systems), Project C2102, Improved Direct Air Support Center (IDASC)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems
PROJECT NUMBER: C2085
PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones			1Q MS III		
Engineering Milestones					
T&E Milestones	2Q DT&E I	4Q IOT&E		4Q OT (V2)	
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C2085 PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Ancillary Hardware Development	268	800	0	0
b. Software Development	7,398	1,865	1,660	1,000
c. Licenses	0	0	20	0
d. Training Development	95	75	250	0
e. Developmental Test and Evaluation	50	206	100	0
f. Operational Test and Evaluation	0	0	0	1,000
g. Program Management Support	1,198	1,650	1,250	1,050
h. Travel	152	100	100	132
i. Miscellaneous	243	42	300	159
Total	9,404	4,738	3,680	3,341

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M
PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems
PROJECT NUMBER: C2085
PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Magnavox, Ft. Wayne, IN	CPAF	AUG 90	102,000	102,000	11,700	7,398	1,865	1,660	1,000	78,377	102,000
Support and Management											
CRC, Dumfries, VA	C/FP	APR 91				698	900	820	600	CONT.	CONT.
DOE, PNL, Richland, WA	WR	OCT 93				430	92	0	0	CONT.	CONT.
ISYS, Orlando, FL	WR	JAN 94				200	400	200	200	CONT.	CONT.
MCCDC, Quantico, VA	WR	OCT 94					85	70	60	CONT.	CONT.
FT SILL, OK	WR	OCT 94					20	20	20	CONT.	CONT.
CECOM, Fort Monmouth, NJ	WR	NOV 94					90	90	90	CONT.	CONT.
MCTSSA, Camp Pendleton, CA	WR	OCT 93				658	300	440	471	CONT.	CONT.
Test and Evaluation											
MCTSSA, CampPen, CA	WR	OCT 93				20	206	200	900	CONT.	CONT.
NAWC, Indianapolis, IN	WR	OCT 94					600	0	0	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C2085 PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

GOVERNMENT FURNISHED PROPERTY

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	100	100	0	CONT.	CONT.
Support and Management				0	0	80	80	0	CONT.	CONT.
Test and Evaluation				0	0	0	0	0	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604719M PROGRAM ELEMENT TITLE: Marine Corps Command/Control/ Communications Systems PROJECT NUMBER: C2085 PROJECT TITLE: Advanced Field Artillery Tactical Data Systems (AFATDS)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	11,700	7,398	1,965	1,760	1,000	CONT.	CONT.
Subtotal Support and Management	0	2,006	1,967	1,720	1,441	CONT.	CONT.
Subtotal Test and Evaluation	0	20	806	200	900	CONT.	CONT.
Total Project	11,700	9,404	4,738	3,680	3,341	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2134 BGPHES-ST	8,402	5,841	5,244	2,107	2,213	2,743	810	782	N/A	35,913
X2135 CHBDL-ST	15,633	12,237	2,356	2,888	2,821	2,662	1,689	1,716	CONT.	CONT.
TOTAL	24,035	18,078	7,600	4,995	5,034	5,405	2,499	2,498	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Battle Group Passive Horizon Extension System - Surface Terminal (BGPHES-ST) extends the Battle Group's line-of-sight radio horizon by using remote receivers in the ES-3A's sensor payload, and sends this information via the Common High Bandwidth Data Link - Surface Terminal (CHBDL-ST) to the surface ships.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

PROJECT NUMBER: X2134
PROJECT TITLE: BGPHES-ST

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2134	8,402	5,841	5,244	2,107	2,213	2,743	810	782	N/A	35,551

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Battle Group Passive Horizon Extension System Surface Terminal (BGPHES-ST) extends the Battle Group's line-of-sight radio horizon by using remote receivers in the ES-3A's sensor payload, via the Common High Bandwidth Data Link Shipboard Terminal (CHBDL-ST). BGPHES-ST will be located in LHD, LHA and CV/CVN Ships Signal Exploitation Space (SSES). The BGPHES-ST 5-position, 5-rack cryptologic control, analysis and reporting center uses Navy-standard DTC/TAC-N series workstations and integral local intercept receivers. The design downsizes and corrects deficiencies from the 14-rack AN/SLQ-50 (XN-1) model tested on USS EISENHOWER (CVN-69) during FY87 (factory verification completion in fall 1989). Development will proceed in two stages, first reducing risk by demonstrating operation with the ship's local receivers (the Ship's Signals Exploitation Equipment (SSEE) Upgrade)), then (timed to meet CHBDL-ST development) adding control and use of the remote airborne payload (the AN/SLQ-50 (XN-3)).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($5,973) Developed, fabricated, and integrated the hardware and software to control BGPHES' airborne payload segment via the BGPHES data link. Started formal factory test program.
- (U) ($729) Developed and tested software to be uploaded to the Navy airborne receiver segment.
- (U) ($250) Defined software interfaces to host ships' Command, Control, Communication, Computers, and Intelligence (C^4I) systems.
- (U) ($750) Initiated rehost of software to TAC-N computer.
- (U) ($250) Initiated software interfaces for Pre-planned Product Improvement (P^3I) and USAF interoperability.
- (U) ($450) Completed planning for integration and test of the (XN-3) with the BGPHES data link and aircraft sensors.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

PROJECT NUMBER: X2134
PROJECT TITLE: BGPHES-ST

2. (U) FY 1995 PLAN:

- (U) ($2,392) Complete factory integration and qualification testing with remoted receiver payload. Demonstrate access to ES-3A prime mission equipment (PME) direction-finding system. Conduct FCA/PCA.
- (U) ($1,068) Conduct integration and test of the BGPHES-ST with the BGPHES data link (CHBDL) and ES-3A remoted sensor payload at the Land Based Test Site (LBTS).
- (U) ($900) Perform DT and IOT&E on overall BGPHES at the LBTS (i.e., BGPHES-ST with CHBDL and Navy airborne segments), followed by completion of at-sea TECHEVAL on CVN; initiation of OPEVAL.
- (U) ($300) Complete definition of software interfaces for P^3I and USAF interoperability; conduct U-2 interoperability demonstration of RS-6B, RAS-1/COMINT.
- (U) ($681) Continue rehost of software to TAC-N computer and definition of software interfaces to host ship's C^4I system.
- (U) ($250) Initiate P^3I access to other ES-3A PME, including special signals.
- (U) ($250) Initiate hardware design for LHD and LHA ship configurations.

3. (U) FY 1996 PLAN:

- (U) ($450) Perform at-sea OPEVAL on overall BGPHES; obtain MS-III decision.
- (U) ($3,094) Continue rehost of software to TAC-N computer and definition of software interfaces to host ship's C^4I system.
- (U) ($600) Continue P^3I access to other ES-3A Prime Mission Equipment (PME), including special signals.
- (U) ($600) Complete hardware design for LHD and LHA ship configurations.
- (U) ($500) Initiate P^3I access to other USAF U-2R PME, including special signals.

4. (U) FY 1997 PLAN:

- (U) ($1,107) Complete rehost of software to TAC-N computer and definition of software interfaces to host ship's C^4I system.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

- (U) ($300) Continue P³I access to other ES-3A PME, including special signals.
- (U) ($500) Continue P³I access to other USAF U-2R PME, including special signals.
- (U) ($200) Initiate USAF U-2R interoperability test with rehosted configuration.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY1995 President's Budget:	8,402	6,160		
(U) FY1995 Appropriated:		6,160		
(U) Adjustments from Appropriated/ FY1995 President's Budget:		-319		
(U) FY1996/97 President's Budget Submit:	8,402	5,841	5,244	2,107

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: -$319K (FY1995). FY1995 was decreased by $319K. $68K to accommodate Small Business Innovative Research and $251K to accommodate undistributed reductions for travel, consulting services, federally funded research centers, and university research.

(U) Schedule: Current schedule unchanged.

(U) Technical: N/A

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN Line 2434*	0	0	0	6,611	11,326	12,715	10,958	7,850	3,236	52,696
O&M,N 4B7N/1B2B	0	0	0	1,968	2,073	2,100	2,159	2,212	Cont.	Cont.

(U) RELATED RDT&E: N/A

*(PARTIAL)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

PROJECT NUMBER: X2134
PROJECT TITLE: BGPHES-ST

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		IOC 4TH QTR	MSIII 3RD QTR		N/A
Engineering Milestones	TRR 4TH QTR	FCA/PCA			
T&E Milestones		DT-IIG-H 2nd Qtr USAF INTEROP 3rd Qtr AT-SEA TECHEVAL 4th Qtr	OPEVAL 2nd Qtr		
Contract Milestones				Award Prod Contract 1st Qtr	

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

PROJECT NUMBER: X2134
PROJECT TITLE: BGPHES-ST

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	700	500	331	141
b. Systems Engineering	1,600	950	800	300
c. Software Development	3,026	1,561	1,537	554
d. Hardware Development	1,426	930	757	253
e. System Test & Evaluation	1,450	1,700	1,669	809
f. Integrated Logistic Support	200	200	150	50
Total	8,402	5,841	5,244	2,107

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
E-Systems Inc, Melpar Div Ashburn, VA	CPIF W/OPTIONS	1/93	21,602	21,602	5,460	6,052	3,441	3,094	1,107	2,448	21,602
Support and Management					660	900	700	481	191	450	3,382
Test and Evaluation					1,289	1,450	1,700	1,669	809	3,650	10,567

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	N/A	N/A
Support and Management				0	0	0	0	0	N/A	N/A
Test and Evaluation				0	0	0	0	0	N/A	N/A

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

PROJECT NUMBER: X2134
PROJECT TITLE: BGPHES-ST

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	5,460	6,052	3,441	3,094	1,107	2,448	21,602
Subtotal Support and Management	660	900	700	481	191	450	3,382
Subtotal Test and Evaluation	1,289	1,450	1,700	1,669	809	3,650	10,567
Total Project	7,409	8,402	5,841	5,244	2,107	6,548	35,551

FY 1996 RDT&E, N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2135	15,633	12,237	2,356	2,888	2,821	2,662	1,689	1,716	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Common High Bandwidth Data Link-Ship Terminal (CHBDL-ST) equipment will provide a common high bandwidth data link shipboard terminal for the receipt of signal and imagery intelligence data from remote airborne sensors and the transmission of link and sensor control data to airborne platforms. Signal intelligence data is received from the Battle Group Passive Horizon Extension System (BGPHES) Airborne Component (AC) and delivered to the BGPHES Shipboard Terminal. Imagery intelligence data is received from various tactical airborne reconnaissance system and delivered to the Joint Service Imagery Processing System - Navy (JSIPS-N).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($11,783) Completed prime equipment fabrication, integration and acceptance tests for Developmental Test/Operational Test (DT/OT)-II. Initiating prime equipment fabrication for factory environmental and qualification testing.
- (U) ($3,500) Completed preparation of the Land Based Test Site (LBTS) at Patuxent River, MD.
- (U) ($150) Completed DT/OT-II CV/CVN installation design, obtain design approval and initiate work planning.
- (U) ($200) Initiated LHD installation design planning.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

2. (U) FY 1995 PLAN:

- (U) ($5,021) Complete prime equipment fabrication for factory qualification testing.
- (U) ($3,066) Deliver DT/OT-II equipment to LBTS for Navy acceptance testing; integrate and begin DT/OT-II.
- (U) ($500) Complete CVN installation work plans for DT/OT-II equipment and initiate DT/OT-II.
- (U) ($250) Initiate LHA installation design planning.
- (U) ($2,000) Rehost of TAC-N computer, initiate design for Solid State Power Amplifier, initiate design capability to handle two data links simultaneously.
- (U) ($1,400) Start Factory Environmental and Qualification testing.

3. (U) FY 1996 PLAN:

- (U) ($200) Complete rehost to TAC-N computer, complete design for solid rate power amplifier, complete design for two data links simultaneously.
- (U) ($256) Complete factory environmental and qualification testing.
- (U) ($800) Install equipment aboard candidate DT/OT platform.
- (U) ($250) Complete Technical Evaluation (TECHEVAL) and Operational Evaluation (OPEVAL) of the CHBDL-ST system.
- (U) ($250) Complete LHA installation design planning.
- (U) ($600) Develop Technical Data Package for Production Contract.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

4. (U) FY 1997 PLAN:

- (U) ($500) Complete Physical Configuration Audit.
- (U) ($500) Complete Functional Configuration Audit.
- (U) ($500) Incorporate design changes from DT/OT.
- (U) ($888) Update supporting documentation for production.
- (U) ($500) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS), Advanced Tactical Air Reconnaissance System (ATARS), and Unmanned Air Vehicle (UAV).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System. PROJECT TITLE: CHBDL-ST

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	15633	13098		
(U) FY 1995 Appropriated:		13098		
(U) Adjustments from PRESBUDG:		-861		
(U) FY 1996/97 OSD/OMB Budget Submit:	15633	12237	2356	2888

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 95 was decreased by $861K; $226K to accomodate Small Business Innovative Research and $635K to reflect undistributed reductions for Travel, Consulting Services, Federally Funded Research Centers and University research.

(U) Schedule: Current schedule unchanged.

(U) Technical: System hardware and software modifications required to exploit additional sensor capabilities on ES-3A and U-2R aircraft.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN Line 2434*	0	0	0	56,749	56,240	65,641	52,882	56,550	Cont.	Cont.
O&M,N	0	0	0	1,968	922	1,252	1,264	1,289	Cont.	Cont.

*(PARTIAL)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon PROJECT TITLE: CHBDL-ST

(U) RELATED RDT&E:
(U) PE (060326261N) Project A2174 Joint Service Imagery Processing Systems - Navy (JSIPS-N)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones			3Q MS III	1Q FCA 1Q PCA	IOC
Engineering Milestones	Software 3Q FQT				
T&E Milestones		1Q DT/OT-II	2Q - TECHEVAL 3Q - OPEVAL		OT-III
Contract Milestones		1Q Deliver			

FY-1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: CHBDL-ST

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	485	600	500	500
b. Systems Engineering	356	1,400	100	628
c. Hardware & Software Development	13,305	6,337	200	300
d. System Test & Evaluation	1,094	1,830	500	160
e. ILS	148	250	208	500
f. Site/Platform Integration	245	1,820	848	800
Total	15,633	12,237	2,356	2,888

FY-1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: CHBDL-ST

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development		10/93	22,889	22,889	870	13,305	6,113	248	300	Cont.	Cont.
UNISYS Salt Lake City, UT	FFP	W/Options									
Other Product Support					545	649	3,626	1,105	2,118	Cont.	Cont.
Support and Management Other Support		Various			355	585	644	503	310	Cont.	Cont.
Test & Evaluation		Various			230	1,094	1,830	500	160	Cont.	Cont.
TOTAL			28,291	28,291	2,000	15,633	12,237	2,356	2,888	Cont.	Cont.

FY-1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: CHBDL-ST

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

GOVERNMENT FURNISHED PROPERTY: Not applicable

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

FY-1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM
PROJECT NUMBER: X2135
PROJECT TITLE: CHBDL-ST

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	1,415	13,954	9,763	1,353	2,418	Cont.	Cont.
Subtotal Support and Management	355	585	644	503	310	Cont.	Cont.
Subtotal Test and Evaluation	230	1,094	1,830	500	160	Cont.	Cont.
Total Project	2,000	15,633	12,237	2,356	2,888	Cont.	Cont.

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FY 1996 RDT&E,N Budget Item Justification Sheet DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2068 JSOW	83,354	113,368	81,837	89,344	63,803	79,698	97,970	77,515	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Standoff Weapon (JSOW) is an air-to-ground weapon designed to attack a variety of targets during day, night and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability will allow several target kills per aircraft sortie.

(U) The JSOW program will first develop a baseline weapon for use against fixed area targets. The baseline JSOW variant will include a kinematically efficient airframe, and integrated Inertial/Global Positioning System (INS/GPS) navigation capability, and a BLU-97/B submunition payload. This weapon will be designed upfront for pre-planned product improvements. The Unitary Warhead variant will add a terminal seeker, a man-in-the-loop data link, and a unitary warhead to enable the attack of blast/frag sensitive or moving point targets. The JSOW Unitary will provide increased accuracy and lethality, and the capability for aimpoint selection, target discrimination, and bomb impact assessment. The JSOW/BLU-108 variant incorporates the Sensor Fuze Weapon submunition (BLU-108) into the baseline vehicle. The JSOW/BLU-108 variant will provide a standoff delivery capability against massed armor and land combat vehicles.

(U) Through adherence to international standards for weapons interfaces and minimized weight and dimension considerations, JSOW will be compatible with Air Force and NATO aircraft. JSOW BLU-108 is a joint Navy/Air Force program.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N Budget Item Justification Sheet DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT NUMBER: E2068 PROJECT TITLE: JSOW

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

(U) BASELINE:

- (U) ($60,698) Continued Engineering & Manufacturing Development (E&MD) efforts
- (U) ($ 8,378) Systems Engineering Technical efforts
- (U) ($ 3,900) Began Developmental Test and Evaluation (DT-IIA) and completed airworthiness testing.
- (U) ($ 6,700) Conducted F/A-18 Integration efforts

(U) UNITARY:

- (U) ($ 1,318) Prepared for P3I Milestone (MS-I), continued Cost Operational Effectiveness Analysis (COEA), and Defense Acquisition Board (DAB) documentation effort in support of MS-I decision.
- (U) ($ 1,100) Continued Pre-Demonstration Validation (DEM/VAL) efforts

(U) Navy BLU-108:

- (U) ($474) Continued Pre-Engineering & Manufacturing Development (E&MD) DAB documentation efforts
- (U) ($786) Conducted Systems Design Review

2. (U) FY 1995 PLAN:

(U) BASELINE:

- (U) ($74,302) Continue Engineering & Manufacturing Development (E&MD) efforts
- (U) ($13,091) Systems Engineering and conduct Critical Design Review (CDR)
- (U) ($ 4,873) Complete DT-IIA testing, conduct DT-IIB testing and commence qualification testing.
- (U) ($ 2,185) F/A-18 Integration

(U) UNITARY:

- (U) ($ 7,500) Commence Demonstration/Validation (DEM/VAL) efforts
- (U) ($ 2,571) Systems Engineering
- (U) ($ 200) F/A-18 Integration

(U) Navy BLU-108:

- (U) ($ 5,000) Smart Racks
- (U) ($ 3,646) Conduct Preliminary Design Review (PDR)

3. (U) FY 1996 PLAN:

(U) BASELINE:

- (U) ($26,700) Continue Engineering & Manufacturing Development (E&MD) efforts
- (U) ($12,806) Systems Engineering, conduct Production Verification Review (PVR) and conduct Program Readiness Review (PRR)
- (U) ($ 3,266) Conduct Developmental Test and Evaluation (DT-IIC)
- (U) ($ 3,826) Conduct Operational Testing (OT-IIA)
- (U) ($ 3,500) F/A-18 Integration

(U) UNITARY:

- (U) ($22,780) Continue Demonstration/Validation (DEM/VAL) efforts
- (U) ($ 5,359) Systems Engineering and conduct System Readiness Review (SRR)
- (U) ($ 1,600) F/A-18 Integration

(U) Navy BLU-108:

- (U) ($ 2,000) Continue Engineering & Manufacturing Development (E&MD) and conduct Critical Design Review (CDR)

4. (U) FY 1997 PLAN:

(U) BASELINE:

- (U) ($13,451) Continue Engineering & Manufacturing Development (E&MD) efforts
- (U) ($ 9,596) Systems Engineering
- (U) ($ 6,151) Conduct Operational Testing (OT-IIB)
- (U) ($ 1,500) F/A-18 Integration

(U) UNITARY:

- (U) ($26,273) Continue Demonstration/Validation (DEM/VAL) efforts
- (U) ($15,480) Systems Engineering, conduct System Design Review (SDR), Critical Design Review (CDR)
- (U) ($ 3,220) F/A-18 Integration

(U) Navy BLU-108:

- (U) ($ 1,525) Continue Engineering, Manufacturing Development efforts
- (U) ($ 675) Systems Engineering
- (U) ($11,473) Fabricate test articles for flight and safety testing

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	81,855	111,127	XXX	XXX
(U) FY 1995 Appropriated:	XXX	116,127	XXX	XXX
(U) Adj. from Appropriated/FY 1995 PRESBUDG	+1,499	-2,759	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	83,354	113,368	81,837	89,344

FY 1996 RDT&E,N Budget Item Justification Sheet DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 was increased by $1,499K reprogramming from JDAM-to-JSOW. FY 1995 decrease OF $2,759K reflects the allocation of undistubuted adjustments.

(U) Schedule: Baseline DT-IIB changed from 4Q/94 to 2Q/95 to accommodate extension of additional DT-IIA testing. DT-IIA testing restructured due to uncertainty of JSOW BLU-108 program during POM-96. Unitary (MSI) and BLU-108 (MS-II) schedule changed from 4Q/94 to 2Q/95 to accommodate OSD direction for POM-96. Unitary (D/V option) contract award dates changed from 1Q/95 to 3Q/95 and BLU-108 (E&MD) contract award date from 1Q/95 to 2Q/95. As a result of Secretary of Defense streamlining initiatives and OSD initiated program issues, Unitary and BLU-108 program milestones were reworked. The additional requirements imposed above resulted in extension of the program.

(U) Technical: Not Applicable

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
USN WPN, PE: 223000										
	0	0	26,218	76,226	126,181	167,169	164,692	182,196	6919,240	7661,922
Quantities Base	0	0	0	126	280	545	535	480	6834	8800
BLU-108	0	0	0	0	0	0	50	100	1050	1200
USAF WP, APPN: 3020 PE: 27324F										
	0	0	0	0	8,500	13,100	12,500	20,200	CONT	CONT
Quantities Base	0	0	0	0	25	50	50	100	CONT	CONT

(U)RELATED RDT&E:
(U) PE 0604727F (USAF RDT&E,F BLU-108)

24,400	56,000	44,300	19,700	12,000	10,400	8,600	0	4,000	179,400

FY 1996 RDT&E,N Budget Item Justification Sheet — Date: February 1995

BUDGET ACTIVITY: 5 — PROGRAM ELEMENT: 0604727N — PROGRAM ELEMENT TITLE: Joint Standoff Weapon System — PROJECT NUMBER: E2068 — PROJECT TITLE: JSOW

D.(U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Baseline					1Q/98 MS-III
Unitary		2Q MS-I			1Q/99 MS-II 3Q/04 MS-III
BLU-108		2Q MS-II			4Q/00 MS-III
Engineering Milestones					
Baseline		3Q CDR	1Q FCA 3Q PVR 4Q PRR		
Unitary			3Q SRR	3Q SDR	3Q/98 PDR 2Q/01 CDR 4Q/01 FCA 1Q/02 PRR
BLU-108	3Q SDR	4Q PDR	4Q CDR		2Q/99 FCA 2Q/99 PVR 3Q/99 PRR 3Q/01 PCA

FY 1996 RDT&E,N Budget Item Justification Sheet — Date: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
T&E Milestones					
Baseline	2Q DT-IIA	2Q DT-IIB	2Q DT-IIC 2Q OT-IIA	1Q OT-IIB 1Q LRIP	
Unitary					1Q/00 DT-IIA 4Q/00 DT-IIB 2Q/01 OT-IIA 4Q/01 DT-IIC 1Q/03 OT-IIB
BLU-108		4Q DT&E		2Q IOT&E	
Contract Milestones					
Unitary		3Q DEM/VAL (OPTION)			1Q/99 E&MD 3Q/02 LRIP
BLU-108		2Q E&MD (CONTRACT AWARD)			1Q/00 LRIP

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	62,272	86,802	51,480	52,722
b. Systems Engineering	6,570	13,348	10,794	18,504
c. Integrated Logistics Support	1,151	2,146	2,560	2,218
d. Training Development	115	814	786	665
e. F/A-18 Integration	6,700	2,385	5,100	4,700
f. Developmental Test and Evaluation	3,900	4,873	3,266	0
g. Operational Test and Evaluation	0	0	3,826	6,151
h. Government Engineering Support	492	1,220	2,042	2,246
i. Program Management Support	1,923	1,510	1,653	1,803
j. Travel	231	270	330	335
Total	83,354	113,368	81,837	89,344

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Major Contracts:											
T.I. E&MD	C/CPIF	10/94	237,000	237,000	61,849	60,698	74,302	26,700	13,451	0	237,000
TI UNITARY PR DEMVAL	C/CPIF	10/94	5,245	5,245	3,270	1,100	875	0	0	0	5,245
TI UNITARY E&MD	C/CPIF	03/95	55,678	55,678	0	0	6,625	22,780	26,273	CONT	CONT
TI BLU-108 PR EMD	CPIF	01/94	474	474	0	474	0	0	0	0	474
TI BLU-108 E&MD	C/CPIF	10/95	14,998	14,998	0	0	0	2,000	12,998	CONT	CONT
TBD (Smart Rack)		06/95	TBD	TBD	0	0	5,000	0	0	CONT	CONT
MCDONNELL DOUGLAS/ F/A-18 Integ	C/CPIF	10/94	TBD	TBD	7,559	4,000	1,500	1,600	3,220	CONT	CONT
Misc Contracts:											
In-House Support:											
NAWCAD, PAX	WX	10/94				1,000	0	0	0	CONT	CONT
NAWCWD, C.L.	WX	10/95				9,492	17,193	17,640	22,867	CONT	CONT
Misc Contracts:					0	0	0	0	0	CONT	CONT
Support and Management											
Major Contracts:						0	0	0	0	0	0
In-House Support:											
Misc Contracts:						2,690	3,000	4,025	4,384	CONT	CONT

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

GOVERNMENT FURNISHED PROPERTY: "NOT APPLICABLE"

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	TO Complete	TOTAL Program
Test and Evaluation										
Major Contracts:					0	0	0	0	0	0
In-House Support:										
NAWCWD, C.L.	WX	10/95			3,900	4,873	3,266	0	CONT	CONT
OPTEVFOUR	WX	10/95			0	0	3,826	6,151	CONT	CONT
Misc Contracts:					0	0	0	0	0	0
Product Development										
Support and Management										
Test and Evaluation										
Subtotal Product Development				72,678	76,764	105,495	70,720	78,809	CONT	CONT
Subtotal Support and Management					2,690	3,000	4,025	4,384	CONT	CONT
Subtotal Test and Evaluation					3,900	4,873	7,092	6,151	CONT	CONT
Total Project				72,678	83,354	113,368	81,837	89,344	CONT	CONT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0166 SPS IMPROVEMENT PROGRAM	9,784	6,380	8,811	7,200	1,597	1,821	1,834	1,888	CONT.	CONT.
U0167 5" RAM MISSILE	8,960	18,148	26,098	24,533	18,868	9,172	8,997	9,278	CONT.	CONT.
U0172 CIWS PHALANX	32,431	25,756	5,703	14,916	15,306	15,442	15,518	15,984	CONT.	CONT.
U0173 NATO SEASPARROW	18,029	48,865	65,390	59,978	46,228	15,106	6,383	4,508	CONT.	CONT.
U0665 IRST	12,386	21,824	4,472	1,615	15,218	32,159	30,816	10,901	CONT.	CONT.
U0954 SHIPBOARD EW DEV	28,888	24,092	10,585	9,572	19,294	31,205	31,638	34,586	CONT.	CONT.
U2176 SSD ENGAGE IMPROV	0	0	0	0	5,216	9,388	9,590	10,052	CONT.	CONT.
U2178 QRCC	4,291	39,245	40,362	30,505	31,436	30,012	14,566	14,751	CONT.	CONT.
U2190 NULKA	8,100	12,873	0	995	973	1,018	995	995	CONT.	CONT.
U2256 SEMI-ACTIVE FUZE	0	0	4,576	7,618	4,751	1,093	0	0	CONT.	CONT.
U2258 ADVANCED DISPLAY SYS	0	24,466	0	0	0	0	0	0	CONT.	CONT.
TOTAL	122,869	221,649	165,997	156,932	158,887	146,416	120,337	102,943	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element, effective for FY 1994, consolidates currently ongoing and planned programmatic efforts related to Ship Self Defense (SSD). The consolidation facilitates effective planning and management of these efforts, exploiting the synergistic relationship inherent in each. These projects are directed by a single program manager in Program Executive Office for Theater Air Defense. Analysis and demonstration have established that surface SSD based on single-sensor detection, point-to-point control architecture performs marginally against current and projected Anti-Ship Cruise Missile (ASCM) threats. The supersonic seaskimming ASCM reduces the effective battle space to the horizon and the available reaction time-line to less than 30 seconds, from first opportunity to detect until the ASCM impacts its target ship. Against such a threat: multi-sensor integration is required for effective detection; parallel processing is essential to reduce reaction time to acceptable levels and to provide vital coordination/integration of hardkill and softkill assets; and improvements in terminal gun system effectiveness and in missile kinematics, control and homing accuracy are required for successful hardkill engagement. These SSD projects address and coordinate the detect, control, and engage functions necessary to meet the rigorous SSD requirements within a development structure dedicated to systems engineering.

(U) DETECTION: Improved coordinated sensor performance to increase the probability of detecting low altitude, low observable targets is to be achieved through the synergism gained from the integration of dissimilar sensor sources. Multi-sensor integration is being addressed through the efforts of Quick Reaction Combat Capability (QRCC) (U2178), while sensor improvements are addressed through the SPS Improvements (U0166), Infrared Search and Track (U0665), and Shipboard Electronic Warfare Improvements (U0954) projects. These improvements to both active and passive detection capabilities are complementary to the ship signature reduction technology also being pursued through project U0954.

(U) CONTROL: Multi-sensor integration, parallel processing and the coordination of hardkill/softkill capabilities in an automated response to the ASCM threat are the cornerstones of Ship Self Defense System (SSDS) being developed through QRCC (U2178) efforts. In addition, that project provides for the central system engineering management of SSD developments, including efforts required to integrate SSDS with the Advanced Combat Direction System (CDS) for those ships having a CDS.

(U) ENGAGEMENT: Both missile and terminal gun system improvements necessary to meet their requirements are being addressed via NATO Seasparrow Missile System (NSSMS) (U0173), 5" Rolling Airframe Missile (RAM) (U0167), and CIWS PHALANX (U0172). Missile improvements are to include improved kinematic performance plus advanced seeker and low elevation fuzing/warhead capabilities.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

Gun system improvements address system detection, rate-of-fire, number of rounds on target, first round accuracy, and reliability and maintenance. The Fuze improvement will provide Evolved SeaSparrow Missile (ESSM) and possibly other missiles with improvements to accurately discriminate targets in high clutter/chaff environments and will provide increased capability in high closing rate engagements.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0166 SPS Improvement Program	9,784	6,380	8,811	7,200	1,597	1,821	1,834	1,888	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops and tests performance and reliability upgrades for search radar equipment to meet the evolving threat.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($200) Supported continuing analysis/trade-off studies and implementation of functional and performance allocations among elements comprising integrated Ship Self Defense System (SSDS), including system interface adaptations and preparation/conduct of associated tests and demonstrations.
- (U) ($1,989) Evaluated proposals for the AN/SPQ-9B Radar. Continued development of acquisition documentation (Cost & Operational Effectiveness Analysis (COEA), Operational Requirement Document (ORD), Test & Evaluation Master Plan (TEMP), etc.) for the AN/SPQ-9B Radar. Continued radar integration task to MK 86 Gun Fire Control System.
- (U) ($5,450) Awarded the development contract for two AN/SPQ-9B Radars in the first quarter of FY 1995. Contract execution will be accomplished from FY 95 and through FY 97 due to FY 96 mark up of $5,238.
- (U) ($2,045) Continued AN/SPQ-9(I) Advanced Development Model (ADM) Radar testing at Naval Research Laboratory's Land Based Test Site (LBTS) and at-sea test/operational assessment with the ADM Radar.
- (U) ($100) Continued SSDS integration studies.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

2. (U) FY 1995 PLAN:

- (U) ($100) Continue SSDS integration engineering.
- (U) ($4,348) Fund ongoing AN/SPQ-9B Radar development contract.
- (U) ($1,132) Manage the AN/SPQ-9B Radar development contract including conduct of Preliminary Design Review (PDR). Continue radar integration task to MK 86 Gun Fire Control System.
- (U) ($800) Continue at-sea-test of the AN/SPQ-9(I) ADM Radar. Analyze and demonstrate the addition of Digital Sidelobe Cancellation to the AN/SPQ-9B Radar as a Product Improvement.

3. (U) FY 1996 PLAN:

- (U) ($150) Continue SSDS integration engineering.
- (U) ($5,367) Continue to fund ongoing AN/SPQ-9B Radar development contract.
- (U) ($3,111) Continue managing the AN/SPQ-9B Radar development contract including conduct of a Critical Design Review (CDR) and a Production Readiness Review (PRR). Continue radar integration task to MK 86 Gun Fire Control System.
- (U) ($183) Continue Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.

4. (U) FY 1997 PLAN:

- (U) ($150) Continue SSDS integration engineering.
- (U) ($5,894) Continue to fund ongoing AN/SPQ-9B Radar development contract. Conduct First Article Testing (FAT) on two production proof kits. Support integration into MK 86 system.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

- (U) ($956) Continue managing the AN/SPQ-9B Radar development contract including conduct of First Article Testing (FAT) at contractor site and MK 86 integration testing at the NAVSURFWARCENDIV PORT HUENEME.
- (U) ($200) Continue Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	9,784	6,543	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	6,543	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	0	-163	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	9,784	6,380	8,811	7,200

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes in funding for FY 95 due to undistributed Congressional reductions for University Research (-13), Consulting Services (-50), Travel (-9), and Small Business Innovative Research reduction (-91).

(U) Schedule: Award contract September 1994.
(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN 14UK040	194	100	225	14,875	25,318	28,622	25,143	17,570	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		1Q SPQ-9B MS IV/II			2Q FY99 SPQ-9B MS III
Engineering Milestones		3Q SPQ-9B PDR	1Q SPQ-9B CDR 4Q SPQ-9B PRR	3Q SPQ-9B FAT	1Q FY98 SPQ-9B INTEGRATION AT LBTS
T & E Milestones		1Q/2Q SPQ-9(I) ADM AT-SEA-TEST			4Q FY98 SPQ-9B DT/OT
Contract Milestones		1Q SPQ-9B CONTRACT AWARD FOR 2PPKs		2Q Four SPQ-9B LRIP OPTION	3Q FY99 SPQ-9B FRP

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. System Development Contract	5,711	4,348	5,367	5,894
b. Contractor Engineering Support	341	155	75	50
c. Government Engineering Support	3,710	1,847	3,089	976
d. Miscellaneous	22	30	280	280
Total	9,784	6,380	8,811	7,200

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands):

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Westinghouse/ Norden Sys Melville, NY	C/CPAF/Reqn	10/94	CONT.	CONT.	0	5,450	4,348	5,367	5,894	CONT.	CONT.
NRL Washington, DC	WR/RC	VAR	CONT.	CONT.	3,500	750	800	1,304	420	CONT.	CONT.
NAVSURFWARCENDIV Port Hueneme, CA	WR	VAR	CONT.	CONT.	2,000	1,161	955	1,489	200	CONT.	CONT.
MISC (APL, CD, NSWC)	PD/WR	VAR	CONT	CONT	2,032	308	27	296	16	CONT.	CONT.
Support and Management -											
MISC (EG&G, Techmatics)	FR	VAR	-	2,403	1,340	365	250	105	80	160	2,300
Test and Evaluation											
MISC (NRL, PHD, NSWC)	WR/RC	VAR	-	5,817	1,330	1,500	0	0	340	2,500	5,670

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Transmitter (Air Force)	MIPR	1/95	3/95	0	250	0	250	250	0	750

Support and Management - Not applicable.

Test and Evaluation - Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	7,532	7,919	6,130	8,706	6,780	2,910	39,977
Subtotal Support and Management	1,340	365	250	105	80	263	2,403
Subtotal Test and Evaluation	1,330	1,500	0	0	340	2,647	5,817
Total Project	10,202	9,784	6,380	8,811	7,200	5,820	48,197

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0167 5" ROLLING AIRFRAME MISSILE										
	8,960	18,148	26,098	24,533	18,868	9,172	8,997	9,278	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The purpose of this program is to develop a surface-to-air self-defense system utilizing a dual mode, passive Radio Frequency/Infrared 5" Rolling Airframe Missile. The baseline system provided a self-defense capability against active radar-guided anti-ship missiles and was developed on an equal cost share basis with the Government of the Federal Republic of Germany. This effort will provide a capability against passive anti-ship missiles, very low altitude missiles, and maneuvering missiles through the incorporation of an infrared all-the-way mode seeker and improved fuze. This system is designed to counter anti-ship cruise missile raids and provide for ship survivability with accurate terminal guidance, proven lethality, and no shipboard fire control dependence.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($6,364) Initiated engineering and manufacturing development on Block I Upgrade, including Infrared (IR) electronics and software, simulation/Engineering Module (EM) testing, critical experiments, and fabrication of test rounds.
- (U) ($2,500) Initiated engineering and manufacturing development effort for improved fuze design.
- (U) ($96) Continued to support analysis/trade-off studies to coordinate and refine element roles within ship self-defense (SSD) strategy. Supported development of system interface adaptations as necessary to provide effective SSD integration.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

2. (U) FY 1995 PLAN:

- (U) ($15,000) Complete Preliminary Design Review (PDR) of INFRARED (IR) seeker design and integration into the current missile. Complete design models. Conduct Integrated Seeker/IR Processor Experiment. Continue development of Algorithms for IR Processor.
- (U) ($3,148) Continue to support analysis/trade-off studies to coordinate and refine element roles with SSD strategy. Support development of system interface adaptations as necessary to provide effective SSD integration.

3. (U) FY 1996 PLAN:

- (U) ($3,000) Continue Algorithm and Electronics Development.
- (U) ($2,000) Prepare technical data and conduct Critical Design Review (CDR).
- (U) ($2,000) Prepare for at-sea testing phase.
- (U) ($6,000) Continue Seeker Hardware Development.
- (U) ($7,000) Assemble Engineering Development Models (EDM) and conduct flight testing.
- (U) ($2,000) Conduct Aircraft Captive Carry Seeker Testing.
- (U) ($2,500) Conduct Government Simulation Testing.
- (U) ($1,598) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

4. (U) FY 1997 PLAN:

- (U) ($2,000) Conduct Government Electromagnetic Compatibility (EMC) testing.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

- (U) ($4,000) Continue Algorithm Development.
- (U) ($2,800) Conduct Government Simulation Testing.
- (U) ($1,000) Documentation of test results.
- (U) ($3,000) Complete Electronics Design.
- (U) ($5,000) Complete Seeker Design.
- (U) ($3,000) Integration Testing.
- (U) ($2,500) Prepare for Technical/Operational Evaluation (TECH/OPEVAL) Testing.
- (U) ($1,233) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	8,960	18,678	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	18,678	XXX	XXX
(U) Adjustments from APPROPRIATED/	0	-530	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	8,960	18,148	26,098	24,533

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Changes in FY 95 funding are due to undistributed Congressional reductions for University Research (-130), Consulting Services (-79), Travel (-26), and Small Business Innovative Research reduction (-295).

(U) Schedule: ASR to 12/93 from 11/93; IPS to 5/94 from 12/93; TEMP to 3/94 from 1/94.
PDM Added: 5/94 (MS IV/II)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in Thousands)

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LINE 172:										
	59,337	53,780	50,609	57,958	52,977	57,331	55,523	57,385	CONT.	CONT.
(U) WPN LINE 10:										
	53,321	63,089	69,208	71,347	34,929	65,596	37,581	38,822	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	3Q GMRP BLK 0 MS IV 3Q GMRP BLK 1 MS II				4Q 98 BLK I MS III
Engineering Milestones		3Q PDR	2Q CDR 3Q LRIP		
T&E Milestones			2Q DT/OT IIA 2Q EDM	2Q DT/OT IIB	
Contract Milestones	4Q EMD BLK I				4Q 98 FRP BLK I

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0167 PROJECT TITLE: 5" Rolling Airframe Missile

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	5,627	14,021	17,394	11,716
b. Ancillary Hardware Development	500	0	300	300
c. Test and Evaluation Government Furnished Property	0	0	3,687	0
d. Developmental Test and Evaluation	0	436	922	6,800
e. Operational Test and Evaluation	0	0	0	1,700
f. Contractor Engineering Support	299	314	329	347
g. Government Engineering Support	2,359	3,217	3,301	3,500
h. Travel	158	160	165	170
i. Miscellaneous	17	0	0	0
Total	8,960	18,148	26,098	24,533

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0167 PROJECT TITLE: 5" Rolling Airframe Missile

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development:											
*HMSC-89C5339	SS/CPFF	9/89	19,630	19,630	18,616	1,014	0	0	0	0	19,630
*HMSC-94C5435	SS/CPAF	6/94	CONT.	CONT.	0	3,956	14,021	17,394	15,870	CONT.	CONT.
NAWC/WD/China Lake, CA	WR	10/93	CONT.	CONT.	5,362	2,359	2,497	2,801	3,962	CONT.	CONT.
Miscellaneous			CONT.	CONT.	201,512	1,332	880	965	970	CONT.	CONT.
Support and Management:											
Miscellaneous			CONT.	CONT.	1,913	299	314	329	347	CONT.	CONT.
Test and Evaluation:											
*HMSC		10/96	CONT.	CONT.	0	0	0	0	1,967	CONT.	CONT.
Miscellaneous		10/94	CONT.	CONT.	0	0	436	922	1,417	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0167 PROJECT TITLE: 5" Rolling Airframe Missile

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0	0
Support Management				0	0	0	0	0	0	0
Test and Evaluation										
*Targets and Missile Sections SS/CPAF		12/95	12/96	0	0	0	3,687	0	0	3,687

* Hughes Missile Systems Company, Tucson, AZ.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	225,490	8,661	17,398	21,160	20,802	CONT.	CONT.
Subtotal Support and Management	1,913	299	314	329	347	CONT.	CONT.
Subtotal Test and Evaluation	0	0	436	4,609	3,384	CONT.	CONT.
Total Project	227,403	8,960	18,148	26,098	24,533	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0172 Close-In Weapons System (Phalanx)	32,431	25,756	5,703	14,916	15,306	15,442	15,518	15,984	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:
The Phalanx mission is to be a fast reaction terminal defense against low and high-flying, high speed maneuvering anti-ship missiles penetrating outer fleet defenses and to counter small surface threats and low, slow-flying air threats. The Phalanx Improvement Program is designed to upgrade Phalanx Block 0 systems to a Block I system configuration and to provide improvements to Block I systems for performance, reliability and maintainability enhancements. The Block I improvements solve safety, reliability and maintainability problems. Performance improvements in development include: (1) Phalanx Surface Mode (PSuM) which will satisfy the operational requirement to counter small surface threats and low, slow-flying air threats; (2) AAW improvements directed towards improving systems susceptibility to EMI and jamming; and (3) integration within SSDS.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($18,855) Continued development of Phalanx Surface Mode (PSuM) to include: (1) Selection of Non-Developmental Item (NDI) automatic acquisition video tracker and advanced electro-optic equipments; and (2) Integration of these equipment capabilities to improve overall system operation in AAW.

- (U) ($7,075) Continued development of Baseline 3 to include design and development of a Low Noise Signal Generator and Digital Signal Processor.

- (U) ($3,758) Started development of AAW improvements and SSDS integration to include: (1) Development of receiver modification to reduce electro-magnetic interference; (2) Integration of the electro-optic system into the AAW fire control algorithms; and (3) Developed the hardware/software interfaces to allow integration into the SSDS.

- (U) ($2,743) Continued Phalanx EMI mitigation testing to define the interference mechanism and determine software and hardware fixes.

2. (U) FY 1995 PLAN:

- (U) ($15,280) Continue development and begin testing of PSuM to include: development of software, integration of NDI electro-optic hardware, and preliminary contractor testing.
- (U) ($3,775) Continue development of AAW improvements to include: Design engineering and documentation of AAW subsystems, component qualification, integration of hardware modifications and EO/RF Fire Control Integration.
- (U) ($3,375) Complete development of initial SSDS integration with Baseline 2 to include: development of initial DT/OT software delivery and support of preliminary testing.
- (U) ($3,326) Complete DT/OT on the High Order Language Computer and operational program.

3. (U) FY 1996 PLAN:

- (U) ($5,703) Complete development and contractor evaluation testing of PSuM and the AAW improvements to include: finalize hardware and software development and prepare for Navy testing.

4. (U) FY 1997 PLAN:

- (U) ($6,116) Complete Navy test and evaluation and DT/OT testing on the Phalanx Improvement Program (PSuM and AAW).
- (U) ($8,800) Start design and development of the next upgrade to Phalanx to satisfy SSDS flowdown requirements which include: (1) Search through Track; (2) Full SSDS functional interface; (3) Mount alignment; and (4) Multi-Sensor Enhancements. Continue system engineering and integration efforts for baseline 3 and future SSDS configurations.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0172
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Close-In Weapon System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	32,431	26,455	XXX	XXX
(U) FY 1995 Appropriated:	XXX	26,455	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	(699)	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	32,431	25,756	5,703	14,916

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes in FY 95 funding due to undistributed Congressional reductions for University Research (-118), Consulting Services (-229), Travel (-37), and Small Business Innovative Research reduction (-315).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN (41)	0	0	0	0	0	0	0	0	0	1,433,100
SCN (VAR)	54,500	0	0	0	0	0	0	0	0	960,800
SCN ORDALTS	28,091	0	36,819	29,993	46,264	55,258	57,610	49,384	CONT.	CONT.
WPN MODS	51,734	49,278	37,326	45,855	58,814	54,983	82,031	64,095	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603755N (Ship Self Defense)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0172
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Close-In Weapon System

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones				3Q MS III	CONT.
Engineering Milestones		2Q PIP PDR 4Q PIP CDR			
T&E Milestones		4Q HOLC DT/OT		1Q PIP NTE 2Q PIP DT/OT	
Contract Milestones	3Q PIP CPAF				

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0172
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Close-In Weapon System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Major Contracts	20,040	15,900	2,400	6,851
b. Support Contracts	798	600	150	500
c. In-House Support	7,343	5,556	797	2,515
d. GFE/Other	4,250	3,700	2,356	5,050
Total	32,431	25,756	5,703	14,916

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0172
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Close-In Weapon System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
NAVSURFWARCENDIV Dahlgren, VA	WR	VAR	CONT.	CONT.	10,076	7,343	4,281	300	2,515	CONT	CONT
General Dynamics Pamona, CA	CPFF	VAR	8,068	8,068	8,068	0	0	0	0	0	8,068
Hughes Missile System Co. Tuscon, AZ	CPFF	VAR	CONT.	CONT.	11,896	20,040	15,900	2,400	6,851	CONT.	CONT.
Miscellaneous	VAR	VAR	22,913	22,913	21,141	0	1,275	497	0	0	22,913
Support and Management											
Miscellaneous	VAR	VAR	CONT.	CONT.	2,371	798	600	150	500	CONT.	CONT.

FY 1996 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0172
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Close-In Weapon System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation											
Crowley Maritime Bremerton, WA	CPAF	VAR	3,943	3,943	0	0	0	0	0	0	3,943
NAVSURFWARCENDIV Port Hueneme, CA	WR	VAR	CONT.	CONT.	19,737	4,250	3,700	2,356	5,050	CONT.	CONT.
Miscellaneous	VAR	VAR	846	846	846	0	0	0	0	0	846

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	51,181	27,383	21,456	3,197	9,366	CONT.	CONT.
Subtotal Support and Management	2,371	798	600	150	500	CONT.	CONT.
Subtotal Test and Evaluation	20,583	4,250	3,700	2,356	5,050	CONT.	CONT.
Total Project	74,135	32,431	25,756	5,703	14,916	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0173 NATO SeaSparrow	18,029	48,865	65,390	59,978	46,228	15,106	6,383	4,508	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program encompasses two (2) primary efforts to enhance ship self defense:

1. (U) Improving the capability of the SEASPARROW Missile to counter the low altitude, maneuvering Anti-Ship Cruise Missile (ASCM) threat. This program will be a cooperative effort by 10 NATO SeaSparrow Nations, including the U.S., and will consist of evolving the SeaSparrow missile through development of a new rocket motor (10" diameter) with tail control and ordnance (warhead) upgrade. The program also includes associated modification to the MK-41 Vertical Launch System (VLS) to provide the capability to store four (4) modified missiles in a single VLS cell ("quad-pack") and test and evaluation.

2. (U) Improvements to the Self Defense Surface Missile System (SDSMS), SWY-1 (NATO SeaSparrow/Target Acquisition System (TAS)), and SWY-2 (TAS and Rolling Airframe Missile (RAM)) weapon systems to sustain effective capability. This program focuses primarily on modifications to the TAS Operational Computer Program (OCP) to support SWY-1/2 integration on multiple ship classes and design/develop hardware and software modifications to integrate NATO SeaSparrow into the Ship Self Defense System and to provide for remote operation of the NATO SeaSparrow system in the Self Defense Test Ship (SDTS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS AND PLANS:
   (a) (U) KINEMATIC MISSILE (ESSM) PROGRAM [$11,130]
   - (U) ($5,800) Completed Evolved SeaSparrow Missile (ESSM) Cost and Operational Effectiveness Analysis (COEA) and Milestone IV documentation, which was initiated in FY 1993 under PE 0603755N Project U2192. ($1,000 for transition to Engineering and Manufacturing Development (EMD)).

- (U) (Not Separately Price (NSP)) Achieve ESSM Milestone IV decision and release ESSM Request for Proposal. Congressional direction restricted obligation of FY94 ESSM funds in excess of $5.8M, until the Assistant Secretary of the Navy for RD&A reports back to Congress on various program matters (conclusions of the COEA; results of the Independent Cost Estimates (ICE) and technical risk assessment; and report on Milestone decision).

- (U) ($5,330) Funding for the ESSM Engineering & Manufacturing Development (EMD) Contract. Combined FYs 1994/1995 funding required for EMD contract to allow prime contractor award of subcontracts to foreign vendors as part of cooperative development of ESSM. This amount is part of the International Cooperative Agreement for development.

(b) (U) OTHER SDSMS (SWY-1/2)

- (U) ($3,677) Continued integration of TAS common Computer Program for SWY-1 for CV/CVN, LHD-1, DD, AOR and AOE classes; SWY-2 (LHA-1) ships and the SDTS coincident with RIM-7P Follow-on Test and Evaluation (FOT&E). Supported Combat System Integration Testing (CSIT) on CV/CVN, LHD and DD SWY-1 type ships for TAS common Computer Programs & NSSMS computer programs with Combat Direction System (CDS) and Advanced CDS (ACDS).

(c) (U) MK 91 REARCHITECTURE

- (U) ($3,222) Commenced integration of MK 91 NSSMS into the SSDS. Conducted critical studies and developed top-level requirements for the use of Advanced Display System (AN/UYQ-70) common display work stations and distributed computer processing. Commenced developing a system remote operating capability for the NATO SEASPARROW Missile System (NSSMS) installed in the Self Defense Test Ship (SDTS).

2. (U) FY 1995 PLAN:

(a) (U) KINEMATIC MISSILE (ESSM) PROGRAM (40,270)

- (U) ($32,470) FY 95 Funding Required for ESSM EMD contract award.

- (U) ($1,500) Intiate effort associated with ESSM and AEGIS System integration.

- (U) ($6,300) Continue efforts associated with MK 41 Quad Pack.

(b) (U) OTHER SDSMS (SWY-1/2)
- (U) ($2,545) Complete SDSMS Computer Program integration program with at-sea testing on LHD-5.

(c) (U) MK 91 Rearchitecture
- (U) ($6,050) Continue implementation of a remote operating capability for the NATO SeaSparrow system installation in the SDTS consistent with Ship Self Defense System integration requirements.

3. (U) FY 1996 PLAN:
(a) (U) KINEMATIC MISSILE (ESSM) PROGRAM [50,875]
- (U) ($33,875) Continue efforts associated with ESSM EMD.
- (U) ($14,000) Continue efforts associated with MK 41 Quad Pack and system integration mods.
- (U) ($3,000) Commence AEGIS "S" Band Uplink Development.
- (U) (NSP) Conduct Preliminary Design Review (PDR) and Critical Design Review (CDR) on ESSM/system modifications.

(b) (U) OTHER SDSMS (SWY-1/2)
- (U) ($3,767) Continue Support for Combat System Integration Testing (CSIT) on CV/CVN, LHD and DD SWY-1 type ships for TAS common Computer Program & NSSMS computer programs with Combat Direction System (CDS) and Advanced CDS (ACDS).

(c) (U) MK 91 Rearchitecture
- (U) ($10,748) Continue implementation of a remote operating capability for the NATO SeaSparrow system installation in the SDTS consistent with Ship Self Defense System (SSDS) integration requirements; and, in parallel, transition engineering into definition of NATO Seasparrow system modification to integrate NATO Seasparrow into SSDS.

4. (U) FY 1997 PLAN:
(a) (U) KINEMATIC MISSILE (ESSM) PROGRAM [48,318]
- (U) ($29,318) Continue efforts associated with ESSM EMD.
- (U) ($14,000) Continue efforts associated with MK 41 Quad Pack and system integration mods.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

- (U) (NSP) Commence DT IIB and OT IIA Test and Evaluation in support of LRIP CA milestone.

- (U) (5,000) Continue AEGIS "S" Band Uplink Development.

(b) (U) OTHER SDSMS (SWY-1/2)
- (U) ($2,238) Continue support for Combat System Integration Testing (CSIT) on CV/CVN, LHD and DD SWY-1 type ships for TAS common Computer Program and NSSMS computer programs with CDS and ACDS.

(c) (U) MK 91 Reachitecture
- (U) ($9,422) Continue implementation of a remote operating capability for the NATO SeaSparrow system installation in the SDTS and parallel modification of NATO Seasparrow for integration into Ship Self-Defense System.

B. (U) PROGRAM CHANGE SUMMARY: Adjustments for undistributed reductions.

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	27,729	50,354	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	50,354	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	-9,700	-1,489	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	18,029	48,865	65,390	59,978

(U) CHANGE SUMMARY EXPLANATION:
- (U) Funding: FY 1994 Navy identified $9.7M to Congress for SCN SCA adjustment. FY 95 funding changes due to undistributed Congressional reductions for University Research (-218), Consulting Services (-360), Travel (-71), and Small Business Innovative Research reduction (-840).

- (U) Schedule: Milestone IV/II decision was received 22 November 1994, with the Acquisition Program Baseline Agreement for ESSM approved by ASN(RD&A) on 19 December 1994, contract award is scheduled for 4/95 to accommodate the report to Congress on the Milestone IV decision; and the 4/95 scheduled conclusion of the international governing agreement negotiations for the ESSM Cooperative Development effort.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0173 PROJECT TITLE: NATO SeaSparrow

- (U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
• (U) 1. WPN BA-2 Other Missiles, Sparrow Modifications including the AIM/RIM-7P, ESSM and MHIP programs (ESSM production startup begins in FY97 and Low Rate Production in FY98 and full rate production in FY99).	26,830	12,704	4,338	32,266	41,760	64,111	80,094	71,049	CONT.	CONT.
• (U) 2. OPN BA-4 NATO SEASPARROW P-1 166 (FY96-outyears): (This line provides funding for follow-on production/installation of R&D related efforts (ESSM and MK 91 rearchitecture system mods beginning in FY99) and non-R&D related mods and installation FY96-01).						28,856	59,244	76,531	CONT.	CONT.

(U) RELATED RDT&E:

- (U) PE 0603609N (Conventional Munitions)
- (U) PE 0604307N (AEGIS Combat System Engineering)
- (U) PE 0604755N (U2176 SSD Engagement Improvement)
- (U) PE 0604755N (U2178 Quick Reaction Combat Capability-QRCC)
- (U) PE 0604755N (U2256 Semi-Active Fuze Improvement)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		1Q MS IV/II			ASN PMR IIA 2Q 98 ASN PMR II 3Q
Engineering Milestones		4Q SRR	1Q SDR 3Q PDR	2Q CDR	CONT. CONT.
T&E Milestones					DT IIB 1Q 98 OT IIA 1Q 98 DT IIF 1Q 99 OT IIC 3Q 99 OT IIIA 1Q 01 DT IIIA 4Q 01
Contract Milestones		3Q EMD CA			LRIP CA 4Q 98 FRP CA 4Q 99

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0173 PROJECT TITLE: NATO SeaSparrow

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	12,845	26,100	31,125	22,366
b. Ancillary Hardware Development	0	6,300	14,000	14,000
c. Software Development	0	1,700	1,000	1,000
d. System Engineering	3,530	3,693	5,803	6,027
e. Development Test & Evaluation	0	300	1,010	2,036
f. Integrated Logistics Support	364	3,484	5,798	7,346
g. Engineering Support	694	2,495	3,009	3,663
h. Program Mgmt Support	66	125	140	155
i. Program Mgmt Personnel	400	1,300	1,300	1,300
j. Travel	130	200	200	200
k. Miscellaneous (less than 15%)	0	3,168	2,005	1,885
Total:	18,029	48,865	65,390	59,978

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
SDSM ENHANCEMENTS:											
Raytheon Wayland, MA	SS/CP	2/94	TBD	TBD	0	2,004	4,890	9,418	8,012	CONT.	CONT.
VITRO Rockville, MD	SS/CPFF	3/95	TBD	TBD	0	0	1,160	1,330	1,410	CONT.	CONT.
Miscellaneous	SS/CPFF	VARIOUS	TBD	TBD	15,740	2,074	0	0	0	CONT.	CONT.
ESSM/QUAD PACK:											
Raytheon/HughesLC/CPAF Wayland, MA/Fullerton, CA		4/95	TBD	TBD	0	5,330	24,322	26,743	23,585	CONT.	CONT.
M.Marietta/UNDEF LC/CPAF Baltimore, MD/MINN, MN		4/95	TBD	TBD	0	796	4,949	11,377	9,994	CONT.	CONT.
Raytheon/ED Wayland, MA	SS/CPFF	4/95	TBD	TBD	0	0	1,571	820	687	CONT.	CONT.
Miscellaneous	SS/CPFF	VARIOUS			836	1,164	3,402	2,344	2,449	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
SDSM ENHANCEMENTS:											
Vitro Rockville, MD	SS/CPFF	11/93	4,125	4,125	2,293	1,250	0	0	0	CONT.	CONT.
ESSM/QUAD PACK:											
Miscellaneous	VARIOUS				0	0	0	50	50	CONT.	CONT.
Test and Evaluation											
GOVERNMENT FURNISHED PROPERTY											
Product Development											
SDSM ENHANCEMENTS:											
Misc	WR				170	970	1,592	2,692	1,308	CONT.	CONT.
ESSM/QUAD PACK:											
NAWC C. LAKE/NWSC	DDWR				0	2,516	2,149	3,731	3,651	CONT.	CONT.
NSWC/PHD	WR				0	570	1,550	2,514	3,414	CONT.	CONT.
Misc	WR				0	456	430	689	855	CONT.	CONT.
Support and Management											
SDSM ENHANDCMENTS:											
Misc	WR				1,102	601	953	1,075	930	CONT.	CONT.
ESSM/QUAD PACK:											
NSPO	PD				0	298	1,597	1,597	1,597	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation										
SDSM ENHANCEMENTS:										
Misc	WR			564	0	0	0	0	CONT.	CONT.
ESSM/QUAD PACK:										
Misc	WR			0	0	300	1,010	2,036	CONT.	CONT.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	16,746	15,880	46,015	61,658	55,365	CONT.	CONT.
Subtotal Support and Management	3,395	2,149	2,550	2,722	2,577	CONT.	CONT.
Subtotal Test and Evaluation	564	0	300	1,010	2,036	CONT.	CONT.
Total Project	20,705	18,029	48,865	65,390	59,978	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0665 IR Search & Track	12,386	21,824	4,472	1,615	15,218	32,159	30,816	10,901	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The sophistication and diversity of threats facing naval surface combatants is increasing with respect to lower radar cross-section, use of passive anti-radiation missle (ARM), increased speed,and lower altitudes. This program element provides funding for acquisition of two infrared sensors-the Infrared Search & Track (IRST)and Thermal Imaging Sensor System (TISS). The IRST provides passive augmentation to complement radar, electronic support measures(ESM)and visual surveillance systems for air targets. It will declare those air targets to the ships' combat system. The TISS provides surface ships with a day/night high resolution surveillance capability for small cross-section targets. It supports anti-surface warfare (ASUW), mine warfare (MIW) and anti-submarine warfare (ASW) missions. The system will be an non-developmental item (NDI) procurement.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Cost and Operational Effectiveness Alaysis (COEA) completed.

- (U) ($2,765) Developed system specifications for TISS and IRST system.
- (U) ($1,333) Prepared request for proposal (RFP).
- (U) ($2,834) Prepared acquisition plans and progressed towards obtaining Milestone (MS) II decision to enter Engineering and Manufacturing Development (E&MD) phase.

- (U) ($5,454) Progressed towards awarding E&MD contract for TISS.

2. (U) FY 1995 PLAN:

- (U) ($13,163) Begin preliminary design of Engineering Development Models (EDMs).
- (U) ($4,071) Perform continuing assessment of risk reduction efforts.
- (U) ($2,565) Deliver E&MD TISS and integrate within the Land Based Test Site (LBTS).
- (U) ($1,675) Conduct technical evaluation (TECHEVAL) and operational assessment of the TISS.
- (U) ($350) Prepare to obtain Milestone III decision for TISS to enter full rate production.

3. (U) FY 1996 PLAN:

- (U) ($4,472) Conduct Preliminary Design Review (PDR) for the IRST.

4. (U) FY 1997 PLAN:

- (U) ($1,615) Conclude Phase I and award contract.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	16,388	22,503	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	22,503	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	-4,002	-679	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	12,386	21,824	4,472	1,615

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0665
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: I/R Search & Track

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes in FY 94 funding due to End-Of-Year execution update reduction (-4,002). Changes in FY 95 funding due to undistributed Congressional reductions for University Research (-111), Consulting Services (-87), Federally Funded Research Development Centers (-58), Travel (-31), and Small Business Innovative Research reduction (-392).

(U) Schedule: IRST development delayed one year due to FY 94 reprogramming and delay in requirements formulation. Follow-on Engineering Development slipped two years to accommodate a 2-phase development approach.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
• (U) OPN Line 204200	0	7,108	3,542	10,352	10,800	11,101	2,226	13,070	CONT.	CONT.
• (U) O&M,N AG/SAG 1D4D	0	0	0	0	0	1,400	1,452	2,600	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0665
PROJECT TITLE: I/R Search & Track

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		3Q MS II[1] 4Q MS II[2]			01 MS III
Engineering Milestones			PDR[2] 3Q		98 CDR[2] 01 P3I PLANNING
T&E Milestones		4Q TECH/OP Assessment[1]			00 QUAL TEST 01 TEST/OPEVAL[2] FOT&E
Contract Milestones		4Q AWARD E&MD PHASE 1[2] 3Q AWARD E&MD[1]			98 AWARD E&MD PHASE 2

1/ Applies to Thermal Imaging Sensor System (TISS) program.
2/ Applies to Infrared Search & Track (IRST) program.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U0665
PROJECT TITLE: I/R Search & Track

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Hardware Development	5,454	14,103	0	0
b. Program Management	1,286	1,113	781	595
c. TDA (Technical Design Agent)	3,195	3,000	2,156	520
d. ISEA	2,451	3,608	1,535	500
Total	12,386	21,824	4,472	1,615

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0665
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: I/R Search & Track

3. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
TBD	C/CP(IRST)	7/95	TBD	19,338	0	0	13,163	0	0	CONT.	CONT.
TBD	FFP (TISS)	6/95	TBD	4,221	0	5,454	940	0	0	CONT.	CONT.
NAVSURFWARCEN Dahlgren, VA	WR	11/94	TBD	TBD	0	3,195	2,500	2,000	520	CONT.	CONT.
NAVSURFWARCEN Port Hueneme, CA	WR	11/94	TBD	TBD	0	2,451	2,433	1,535	500	CONT.	CONT.
All other contracts					0	800	721	487	200	CONT.	CONT.
All other field activities					0	200	50	50	50	CONT.	CONT.
Support and Management											
PEO Travel					0	20	89	60	10	CONT.	CONT.
All other contracts					0	266	253	340	335	CONT.	CONT.
Test and Evaluation											
NAVSURFWARCEN Dahlgren, VA	WR	TBD	TBD	TBD	0	0	500	0	0	CONT.	CONT.
NAVSURFWARCEN Port Hueneme, CA	WR	TBD	TBD	TBD	0	0	1,175	0	0	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U0665
PROJECT TITLE: I/R Search & Track

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development	0	12,100	19,807	4,072	1,270	CON'T	CON'T
Subtotal Support and Management	0	286	342	400	345	CON'T	CON'T
Subtotal Test and Evaluation	0	0	1,675	0	0	CON'T	CON'T
Total Project	0	12,386	21,824	4,472	1,615	CON'T	CON'T

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604775N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0954 Shipboard EW Improvements	28,888	24,092	10,585	9,572	19,294	31,205	31,638	34,586	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Shipboard Electronic Warfare (EW) Improvements Program major efforts are: Advanced Capability (ADCAP) Improves Active Countermeasure capability; AN/SLQ-32(V) Phase E - Improves threat detection capability; DECM/Decoy Integration (DDI) - Integration of MK36 Decoy Launching System with AN/SLQ-32(V) Shipboard Electronic Countermeasures System (ECM). The Advanced Torch Decoys program develops Ship Launched Decoys capable of seduction and distraction of Infrared (IR) homing Anti-Ship Missiles. The MK 186 MOD 2 Torch provides improved flame characteristics. OUTLAW BANDIT Ship Signature management includes development of Radar Cross Section (RCS) reduction treatments for FFG 7, DD 963, DDG 993, CG 47 class ships and also covers RCS and IR measurement and control techniques. Advanced Integrated Electronic Warfare Systems (AIEWS) will provide the EW capability to support ship defense and introduces the next generation of EW technology, MMI, SSDS Integration, Improved Electronic Support, Improved Electronic Attack.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($8,474) Performed Phase E Critical Design Review (CDR) and Factory tests.
- (U) ($3,181) Conducted ADCAP/DDI testing. Final Developmental Testing/Operational Testing (DT/OT).
- (U) ($5,378) Continued Signature Management Program. Completed radar cross section control (RCSC) design package for CG 47 and DD 963. Completed SPG antenna reflectivity improvements. Conducted COMOPTEVFOR V&V efforts on EW effectiveness modeling and simulation as part of Follow-on Test and Evaluation (FOT&E) preparations.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0954 PROJECT TITLE: Shipboard EW Improvements

- (U) ($2,500) AIEWS restructured Phase I of AIEWS - includes SLQ-32 Phase E.
- (U) ($1,800) Conducted AIEWS multiple concept Exploration and Definition Studies.
- (U) ($4,705) NULKA.
- (U) (1,900) AIEWS - Prepared restructured program logisitics, and AEIWS technical and program documentation.
- (U) ($450) Completion of TORCH developmental/operational testing.
- (U) ($500) Special project systems test.

2. (U) FY 1995 PLANS:

- (U) ($1,779) Complete ADCAP. Conduct ADCAP MS III 2Q/95.
- (U) ($16,513) Initiate AIEWS Phase I Development. (Includes Phase E)
- (U) ($5,800) Signature Measurement - Conduct DT-III on CG 47 and DD963 classes. OT-III element of DT/OT cancelled. DT-III expanded to include Multi-Ship. Fleet applications and additional threat representative systems. Conduct DT-III on USS WADSWORTH (FFG9) (R&D installation). Conduct hardkill/softkill integration effectiveness modeling and simulation.

3. (U) FY 1996 PLANS:

- (U) ($6,613) Continue AIEWS Phase I Development and initiate AIEWS Phase II.
- (U) ($3,972) Complete RCSR design package for DD993 class. RAM Improvement program, including maintenance and reduced installation costs initiatives. Continue measurement testing. Continue Hardkill/Softkill integration effectiveness modeling and simulation.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U0954 PROJECT TITLE: Shipboard EW Improvements

4. (U) FY 1997 PLANS:

- (U) ($5,060) AIEWS - Completing Phase I and continuing Phase II.
- (U) ($4,512) OUTLAW BANDIT - Continue OUTLAW/Measurements. Continue RAM improvement program. Continue Hardkill/Softkill integration effectiveness modeling and simulation.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	28,388	29,573	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	29,573	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	+500	-5,481	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	28,888	24,092	10,585	9,572

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994: Changes in funding due to End-Of-Year execution update increase (+500); FY 1995: University Research (-72), Travel (-34), Small Business Innovative Research (-275), and transfer of OACM to NULKA Decoy project (U2190) (-5,100).

(U) Schedule: AIEWS program restructured to include back fitting to AN/SLQ-32 ships.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 231200 (AN/SLQ-32-12TC)	0	19,852	3,608	12,878	12,163	18,264	17,937	14,405	0	99,107

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestone		ADCAP MS III 2Q			
Engineering Milestone	PHASE E CDR 2Q H/W	AIEWS PHASE 1 DEVELOPMENT			
T&E Milestone	ADCAP/DDI DT/OTII 4Q		AIEWS DT/OTIIA PHASE 4Q	AIEWS DT/OTIIB PHASE I 4Q	
		OUTLAW BANDIT DT III/FOT&E 3Q DT III/FOT&E 4Q			
Contract Milestones		AIEWS PHASE 1 AWARD 3Q			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Major Contracts	7,034	16,037	3,019	4,075
b. System Engineering	4,541	2,000	2,290	1,931
c. Program Spt/Review/ Meetings-In/House Spt	10,539	4,024	2,518	1,934
d. Test & Evaluation	2,225	500	1,325	745
e. Contractor Eng. Spt	2,437	500	458	400
f Program Mgmt Spt	425	608	680	342
g. Logistic Spt	1,316	50	50	50
h. Software Development/ Documentation	298	250	150	0
i. Travel	73	123	95	95
TOTAL:	28,888	24,092	10,585	9,572

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
ADCAP											
NRCCB	SS/CPFF	12/86	18,916	18,916	18,916	0	0	0	0	0	18,916
PHASE E											
NRCCB)	C/CPFF	5/92	16,329	16,329	7,060	6,269	3,000	0	0	0	16,329
AIEWS											
TBD	TBD	4/95	TBD	CONT.	0	0	10,844	2,219	3,000	CONT.	CONT.
AIEWS/NAVSEA	C/CPFF	01/95	709	709	0	0	709	0	0	0	709
OUTLAW/NAVSEA		10/94	CONT.	CONT.	0	765	1,484	800	1,075	CONT.	CONT.
ADCAP/PHASE E/AIEWS											
NRL	WR/RCP	12/94	TBD	CONT.	17,901	3,713	1,860	1,275	872	CONT.	CONT.
NSWC/DH;WHITE											
OAK;CRANE;NWAD	WR/RCP	01/95	TBD	CONT.	22,747	4,325	842	1,689	1,096	CONT.	CONT.
OACM											
NRL	WR/RCP	12/94	930	930	0	930	0	0	0	0	930
NSWC/DH;WHITE											
OAK;CRANE	WR/RCP	01/95	3,838	3,838	0	3,838	0	0	0	0	3,838
OUTLAW BANDIT											
NRL	WR	10/94	TBD	CONT.	12,600	1,335	1,804	1,052	1,077	CONT.	CONT.
NSWC/DH;CRANE;PHD;											
NCCOSC	WR/RCP	01/95	TBD	CONT.	18,000	2,094	1,437	1,200	1,020	CONT.	CONT.
SPCC	WR	10/94	TBD	CONT.	750	359	280	250	250	CONT.	CONT.
TRAVEL	WR	10/94	TBD	CONT.	752	73	123	95	95	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Support and Management											
ADCAP/PHASE E											
AIEWS/OUTLAW BANDIT											
NRCCB/NAVSEA/APL)	PD/PR	10/94	TBD	CONT.	13,242	2,962	1,209	680	342	CONT.	CONT.
Test & Evaluation											
ADCAP/PHASE E/OUTLAW		01/95	TBD	CONT.	5,238	2,225	500	1,325	745	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	98,726	23,701	22,383	8,580	8,485	CONT.	CONT.
Subtotal Support and Management	13,242	2,962	1,209	680	342	CONT.	CONT.
Subtotal Test and Evalutation	5,238	2,225	500	1,325	745	CONT.	CONT.
Total Project	117,206	28,888	24,092	10,585	9,572	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2178 Quick Reaction Combat Capability (QRCC)	4,291	39,245	40,362	30,505	31,436	30,012	14,566	14,751	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The QRCC program provides ships with an integrated self defense capability to defend themselves from aircraft and missile attack. The capability will shorten reaction time, increase ship's fire power and automate previously manpower intensive functions. In the present and projected littoral warfare environment, non-AEGIS ships which have manual or unintegrated ship defense systems are unable to protect themselves sufficiently to perform their intended missions. The QRCC concept converts manual control of several different ship self defense systems into a single integrated capability under the computer aided control of ship operators. It does this through the implementation of the Ship Self Defense System (SSDS) and improvements to other self defense system elements to integrate multiple sensors, coordinate and integrate weapon systems, provide hardkill and softkill integration, and automate the detection through engagement sequence under the control of flexible embedded doctrine. The current focus of this project is the development of the SSDS which leverages recent critical experiments, the Rapid Anti-Ship Missile Integrated Defense System (RAIDS) program efforts, and the SSDS demonstration on USS WHIDBEY ISLAND (LSD 41) in June 1993. Improvements to current system performance with respect to short range anti-air ship self defense will apply multi-sensor integration to existing sensors, improve ship defense local command and control functions, integrate and coordinate weapon systems, and provide hardkill/softkill integration. System architecture centers on a distributed processing concept which uses a fiber optic local area network (LAN), LAN access units, Advanced Display System workstation, and software to integrate existing sensors and weapons. The initial effort will focus on the LSD 41 class of ships to integrate existing LSD 41 class sensors, the Rolling Airframe Missile (RAM), Phalanx Close-in Weapon System (CIWS), and Electronic Countermeasures System (SLQ-32). Other ship systems such as ship support, navigation, and Interrogation Friend or Foe will also be integrated into the system via the LAN. The distributed architecture allows the incremental evolution and implementation of follow-on modification to the SSDS which will integrate other ship self defense elements, such as the NATO Seasparrow missile system, Target Acquisition System (TAS), and other sensors, as well as the RAM, CIWS, and SLQ-32 installations on other ship classes. Ships with a Combat Direction System (CDS) or the Advanced CDS will also have those systems integrated with SSDS to optimize the use of offboard track data in ship self defense and transmit SSDS track data to other ships.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($3,091) Continued risk reduction engineering efforts of SSDS MK 1 for the LSD 41 (Dock Landing Ship) class.
- (U) ($1,000) Conducted system requirements review and system design review. Completed system specification.
- (U) ($100) Initiated design and engineering of modifications to the MK 1 system for installation aboard LHD, LHA (Amphibious Assault Ship), and Aircraft Carriers.
- (U) ($100) Initiated Integrated Logistic Support and other programmatic efforts to prepare for fleet support requirements.

2. (U) FY 1995 PLAN:

- (U) ($9,100) Continue risk reduction efforts for SSDS MK 1 system for LSD 41 class ship.
- (U) ($10,500) Conduct MS II review and begin Engineering and Manufacturing Development (E&MD) for SSDS MK 1 system for LSD 41 class ship.
- (U) ($10,000) Initiate Land Based Test Site (LBTS) development for SSDS MK 1.
- (U) ($5,645) Continue design and engineering efforts for SSDS MK 1 system onboard follow-on class ships.
- (U) ($4,000) NATO Sea Sparrow Missile System rearchitecture for follow-on class ships.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U2178 PROJECT TITLE: Quick Reaction Combat Capability

3. (U) FY 1996 PLAN:
- (U) ($17,000) Continue E&MD development of SSDS MK 1 for LSD 41 class.
- (U) ($10,550) Commence DT on LSD 41 class ship.
- (U) ($1,000) Complete programmatic documentation to support Milestone III deployment decision.
- (U) ($4,362) Complete logistics requirements to support DT/OT and MS III.
- (U) ($4,450) Complete milestone III and transition to production of SSDS MK 1 LSD 41 class ships.
- (U) ($3,000) Continue engineering development of SSDS MK 1 for follow-on class ships.

4. (U) FY 1997 PLAN:
- (U) ($14,500) Continue E&MD development and commence DT of SSDS MK 1 for LHD class ship.
- (U) ($3,900) Continue E&MD of SSDS MK 1 for follow-on class ships.
- (U) ($750) Support programmatic documentation changes.
- (U) ($3,855) Support logistics requirements due to ship class adaptations.
- (U) (7,500) Complete DT and conduct OT on LSD 41 class ship.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	4,291	27,395	XXX	XXX
(U) FY 1995 Appropriated:	XXX	41,395	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	-2,150	XXX	XXX
(U) FY 1996/97 PRESBUDG: Submit:	4,291	39,245	40,362	30,505

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes in funding in FY 95 due to undistributed Congressional reductions for University Research (-1,272), Consulting Services (-202), Travel (-37) and Small Business Innovative Research reduction (-639).

(U) Schedule: Rescheduled MS II from FY 94 to FY 95 compresses E&MD phase and moves OT and MS III from FY 96 to FY 97.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 523400 Pt Def. Sppt Eqmt (RAIDS)	12,104	573	0	0	0	0	0	0	0	12,677
(MK 1)	0	0	15,643	18,815	22,557	45,869	51,128	49,522	CONT.	CONT.
(U) O&MN 14D70 Wpn Maint. QRCC	3,007	3,913	3,985	6,357	4,859	5,913	6,400	6,554	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603755N (Ship Self Defense)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program		2Q MK 1 MS II		2Q MK 1 MS III	
Milestones					
Engineering Milestones		1Q MK 1 TLDR* 3Q MK 1 IPDDR**			
T&E Milestones				1Q LSD 41 Class DT II 1Q LSD 41 Class OT II	2Q 98 CVN-76 FOT&E 4Q 98 LHD FOT&E 2Q 99 LHA FOT&E 4Q 99 CVN-68 FOT&E 2Q 01 LPD-17 OT&E TBD CVN-76 FOT&E
Contract Milestones		2Q MK 1 EMD	2Q MK 1 PROCMT	2Q MK 1 PROCMT	

* TLDR - Top Level Design Review
** IPDDR - In Process Detailed Design Review

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	0	8,462	5,641	0
b. Ancillary Hardware Development	0	350	790	0
c. Software Development	4,141	10,500	11,000	7,200
d. Systems Engineering	100	9,100	2,952	2,407
e. Training Development	0	800	800	2,200
f. Integrated Logistics Support	0	600	500	400
g. Configuration Management	0	300	204	198
h. Install	0	1,000	3,475	1,500
i. Test & Evaluation	0	3,900	10,550	11,900
j. Government Engineering Support	0	2,283	2,500	2,750
k. Program Management Support	0	1,200	1,200	1,200
l. Documentation	0	600	600	600
m. Travel	50	150	150	150
Total	4,291	39,245	40,362	30,505

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Hughes Tucson, AZ	SS/FP	10/94	CONT.	CONT.	0	0	19,547	14,139	14,409	CONT.	CONT.
NAVSURFWARCENDIV Port Hueneme, CA	WR	various	CONT.	CONT.	0	0	2,700	4,979	4,298	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	various	CONT.	CONT.	0	0	2,283	2,500	2,750	CONT.	CONT.
JHU/APL Laurel, MD	SS/FP	10/93	CONT.	CONT.	0	1,501	7,500	5,000	2,500	CONT.	CONT.
Support and Management											
Techmatics Arlington, VA	SS/FP	12/94	1,200	1,200	0	0	1,200	0	0	0	1,200
Comptek Arlington, VA	SS/FP	12/94	700	700	0	100	600	0	0	0	700
TBD	SS/FP	various	CONT.	CONT.	0	0	0	1,800	1,800	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	various	CONT.	CONT.	0	0	300	179	198	CONT.	CONT.
Travel			CONT.	CONT.	0	50	150	150	150	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

Test and Evaluation											
NAVSURFWARCENDIV											
Port Hueneme, CA	WR	various	CONT.	CONT.	0	0	900	5,275	2,200	CONT.	CONT.
NAVSURFWARCENDIV											
Dahlgren, VA	WR	various	CONT.	CONT.	0	0	3,000	5,275	2,200	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Hardware - ADS Equip., LAUs, Fiber Optic Cables										
Unisys										
St Paul, MN	SS/FP	1/94	4/95	0	2,640	1,065	1,065	0	2,640	7,410

Support and Management Not Applicable.

Test and Evaluation Not Applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U2178
PROJECT TITLE: Quick Reaction Combat Capability

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	4,141	33,095	27,683	23,957	CONT.	CONT.
Subtotal Support and Management	0	150	2,250	2,129	2,148	CONT.	CONT.
Subtotal Test and Evaluation	0	0	3,900	10,550	4,400	CONT.	CONT.
Total Project	0	4,291	39,245	40,362	30,505	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2190 NULKA Decoy	8,100	12,873	0	995	973	1,018	995	995	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Offboard Active Decoy (NULKA) is a joint cooperative program between the United States and Australia to develop an active offboard decoy which utilizes a broadband radio frequency repeater mounted atop a hovering rocket. The Decoy is designed to counter a wide variety of present and future radar guided Anti-Ship Missile (ASM) threats by radiating a large radar cross section signal while flying a shiplike trajectory. The United States developed the Electronic Payload and Fire Control System. Currently the United States is modifying the payload to incorporate cost savings improvements and improve reliability. The Fire Control System components are being consolidated and modified. The MK 36 Decoy Launching System (DLS) is being modified to support NULKA Launches. Australia developed the hovering rocket, launcher, and launcher interface unit.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

   - (U) ($8,100) Continued NULKA development, Payload Improvement Program (PIP)/cost reductions leading to limited production.

2. (U) FY 1995 PLAN:

   - (U) ($12,873) RDT&E funds to continue NULKA development. Commence launch system integration testing, continue rocket motor qualification program, and commence fabrication and delivery of test rounds.

3. (U) FY 1996 PLAN: Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2190
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NULKA Decoy

4. (U) FY 1997 PLAN:

- (U) ($995) Conduct DT/OT testing required to achieve a milestone III decision for stand-alone NULKA system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	8,100	0	XXX	XXX
(U) FY 1995 APPROPRIATED:	XXX	8,000	XXX	XXX
(U) Adjustments from APPROPRIATED/ FY 1995 PRESBUDG:	0	+4,873	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	8,100	12,873	0	995

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Changes in funding for FY 95 due to transfer of OACM from project U0954 (SHPBD EW) (+5,100), undistributed Congressional reductions for University Research (-13), Consulting Services (-50), Travel (-7) and Small Business Innovative Research reduction (-157).

(U) Schedule: Milestones included for NULKA program, previously unfunded.

(U) Technical: Continuation of NULKA program, previously unfunded.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 553000	0	0	12,615	13,514	16,756	17,374	16,593	16,694	CONT	CONT
(U) OPN Line 553005	0	0	0	2,605	1,066	1,809	2,047	1,791	CONT	CONT

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT NUMBER: U2190 PROJECT TITLE: NULKA Decoy

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones			2Q MS IIA	3Q MS III	
Engineering Milestones					
T&E Milestones			1Q Qual Test	1Q - DT 2Q - OT	
Contract Milestones			3Q LRIP AWARD		

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2190
PROJECT TITLE: NULKA Decoy

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development	4,754	10,095	0	0
b. Software Development	1,000	1,000	0	0
c. Systems Engineering	2,133	1,678	0	0
d. Program Management Support	213	100	0	0
e. Miscellaneous	0	0	0	0
f. Test and Evaluation	0	0	0	995
Total	8,100	12,873	0	995

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2190
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NULKA Decoy

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)
PERFORMING ORGANIZATIONS

Contrator/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Sippican Marion, MA	SS/CPFF	09/94	CONT.	CONT.	2,300	1,112	0	0	0	CONT.	CONT.
AWA Melbourne, Australia	SS/FP	06/94	CONT.	CONT.	0	2,133	0	0	0	CONT.	CONT.
APL Laurel, MD	WR	05/94	CONT.	CONT.	0	280	0	0	0	CONT.	CONT.
ARC Gainesville, VA	SS/CPFF	04/94	CONT.	CONT.	0	864	2,136	0	0	CONT.	CONT.
AWA/SIPP Melbourne, Australia/Marion, MA	SS/FPI	03/95	CONT.	CONT.	0	2,049	7,320	0	0	CONT.	CONT.
NSWC Dahlgren Dahlgren, VA	WR	10/94	CONT.	CONT.	0	121	1,639	0	0	CONT.	CONT.
NSWC Crane Crane, IN	WR	10/94	CONT.	CONT.	0	396	1,083	0	0	CONT.	CONT.
NSWC PHD Port Hueneme, CA	WR	04/94	CONT.	CONT.	0	700	0	0	0	CONT.	CONT.
NSWC IHD Indian Head, MD	WR	10/94	CONT.	CONT.	0	0	320	0	0	CONT.	CONT.
NWS Earle Colts Neck, NJ	WR	10/94	CONT.	CONT.	0	232	275	0	0	CONT.	CONT.
Support and Management											
Techmatics Sterling, VA	C/FP	04/94	CONT.	CONT.	0	213	100	0	0	CONT.	CONT.
Test and Evaluation											
TBD		11/96	CONT.	CONT.	0	0	0	0	995	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2190
PROJECT TITLE: NULKA Decoy

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	2,300	7,887	12,773	0	0	CONT.	CONT.
Subtotal Support and Management	0	213	100	0	0	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	995	CONT.	CONT.
Total Project	2,300	8,100	12,873	0	995	CONT.	CONT.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2256 SEMI-ACTIVE FUZE IMPROVEMENT	0	0	4,576	7,618	4,751	1,093	0	0	0	18,038

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

(U) Selected Semi-Active Fuze technology development efforts have become available for transition into an engineering and manufacturing development program; this emergent technologies can provide improved capabilities for one or more Ship Self Defense programs.

(U) While development of the Evolved SeaSparrow Missile (ESSM) under project U0173 will provide enhanced ship survivability against current and emerging threat, additional capability is required to pace the evolving threat. Maneuverable, low radar cross section anti-ship missiles can be countered by near term fuzing system improvements and mid-term improvements including dual mode seekers and even greater kinematic performance. This is a "NEW START PROGRAM".

(U) This near term fuze improvement will provide improved data processing to accurately discriminate targets in high clutter/ECM environments and provide increased capability in high angle of attack/high closing rate engagements. The fuze design is based on an upgrade of existing AIM/RIM-7 DSU-34B Fuze; accordingly, the improved fuze will be form and function compatible with ESSM and existing AIM/RIM-7P missiles.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1995 PLAN: Not Applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: SHIP SELF DEFENSE PROJECT NUMBER: U2256 PROJECT TITLE: SEMI-ACTIVE FUZE IMPROVEMENT

3. (U) FY 1996 PLAN:

- (U) [4,576] Commence development of a fuze modification for the ESSM Missile to Counter the Advanced Low Altitude highly maneuverable threats.

4. (U) FY 1997 PLAN:

- (U) [7,618] Continue effort associated with the fuze modification for the ESSM.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	0	0	XXX	XXX
(U) FY 1995 Appropriated:	XXX	0	XXX	XXX
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	0	0	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	0	0	4,576	7,618

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Not Applicable.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROGRAM ELEMENT TITLE: SHIP SELF DEFENSE PROJECT NUMBER: U2256 PROJECT TITLE: SEMI-ACTIVE FUZE IMPROVEMENT

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) Not Applicable

FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
				N/A					

(u) RELATED RDT&E:

- (U) PE 0604755N (U2176 - SSD Engagement Improvement)
- (U) PE 0603609N (Conventional Munitions)
- (U) PE 0604755N (U0173 - Evolved SeaSparrow Missile (ESSM))

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					Continued Continued
Engineering Milestones			4Q PRD	1Q CDR	Continued Continued
T&E Milestones					Continued Continued
Contract Milestones			2Q EMD CA		Continued Continued

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: SHIP SELF DEFENSE
PROJECT NUMBER: U2256
PROJECT TITLE: SEMI-ACTIVE FUZE IMPROVEMENT

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development			4,576	7,618
Total			4,576	7,618

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Missile P3I	PD	12/95	18,038	18,038	0	0	0	4,576	7,618	5,844	18,038
Support and Management		Not Applicable.									
Test and Evaluation		Not Applicable.									
Total Project								4,576	7,618	5,844	18,038

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2256
PROGRAM ELEMENT TITLE: SHIP SELF DEFENSE PROJECT TITLE: SEMI-ACTIVE FUZE IMPROVEMENT

GOVERNMENT FURNISHED PROPERTY, Not Applicable

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development							4,576	7,618	5,844	18,038
Subtotal Support and Management							0	0		
Subtotal Test and Evaluations							0	0		
Total Project							4,576	7,618	5,844	18,038

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604771N
PROGRAM ELEMENT TITLE: Medical Engineering Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROG
M0933 Medical/Dental Equipment Development	3731	1681	3402	3236	3626	4429	4461	4590	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The purpose is to develop biomedical equipment to reduce morbidity, to enhance the logistic feasibility of modern medical care for combat casualties, to speed return to duty, and to ensure that personnel are medically qualified for military duty. Each work unit undertaken in this project has a documented, authenticated military requirement. Efforts are justified based upon military payoff and cost benefit. There is a strong potential for dual use, technology transfer and industrial participation in the project.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($821) Developed prototype clinical tests for aviator spatial disorientation (SD) susceptibility. Potential benefit is avoidance of $300 million DOD aircraft losses yearly attributed to SD, and mission failures such as the Iran hostage rescue. Seven of 14 Navy aircraft lossed in Gulf War due to SD.
- (U) ($1057) Developed "Good Manufacturing Practices" for Liposome Encapsulated Hemoglobin, an artificial red blood cell. Potential benefit is sterile blood substitute with long shelf life and no immune reaction.
- (U) ($545) Developed sound attenuating material for passive hearing protection. This material will increase effectiveness of hearing protector "ear muffs" without increased cost. Potential benefit is tens of millions of dollars in hearing loss claims annually.
- (U) ($120) Test and verification that industrial production of Farnsworth Lantern color vision test is within specifications, and that the new lantern is a valid test of military color vision.

Exhibit R-2

- (U) ($283) Close out costs of contract for development of Resuscitation Fluids Production System. Joint Army-Navy Milestone III decision to terminate because FDA approval could not be obtained without inordinate costs for more data on sterility.

- (U) ($340) Two small business contracts to explore technologies for washing cryoprotectant from thawed frozen banked blood. Gulf War lesson learned: we need 4X the throughput available from existing technologies.

2. (U) FY 1995 PLAN:

- (U) ($400) Field test of new sound attenuating material in standard "ear muffs" and new design including vacuum barrier to sound.

- (U) ($577) Large animal test of Liposome Encapsulated Hemoglobin (LEH) to obtain data for FDA approval

- (U) ($110) Completion of manufacturing standards for Farnsworth Lantern color vision test, and validation of the test as a predictor of operational color vision performance.

- (U) ($594) Contract for development of device to wash cryoprotectant from frozen banked blood. An additional $565 deferred to FY 1995 will be applied to this task.

3. (U) FY 1996 PLAN:

- (U) ($266) Continue development of low-cost, high efficiency hearing protection. Potential benefit is $48M/yr Navy Dept VA claims, $8M/yr Navy civilian claims.

- (U) ($824) Continue development of Good Manufacturing Practices for Liposome Encapsulated Hemoglobin blood substitute, including safety and efficacy tests.

- (U) ($430) Development of clinical tests to screen aviators most susceptible to spatial disorientation. Potential benefit is 30 aircraft and 40 lives per year in Navy, $300M per year in DOD aircraft costs.

- (U) ($1882) Continue development of washer to clear cryoprotectant from thawed frozen banked blood. Gulf War lesson learned: need for greater throughput. Joint Army/Navy.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604771N
PROGRAM ELEMENT TITLE: Medical Engineering Development

4. (U) FY 1997 PLAN:

- (U) ($300) Continue development of hearing protection.
- (U) ($859) Continue development of Liposome Encapsulated Hemoglobin.
- (U) ($1848) Continue development of washer to clear cryoprotectant from thawed blood.
- (U) ($229) Complete development of clinical test of aviator spatial orientation.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	3985	1686		
(U) FY95 Appropriated:		1686		
(U) Adjustments from PRESBUDG:	-254	-5		
(U) FY 1996/97 OSD Budget Submit:	3731	1681	3402	3236

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1994 end-of-year execution adjustment. Adjustments in FY 1995 are the result of various Congressional undistributed reductions.

(U) Schedule:

(U) Technical:

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) N/A

FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM

Exhibit R-2

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604771N PROGRAM ELEMENT TITLE: Medical Engineering Development PROJECT NUMBER: M0933 PROJECT TITLE: Medical/Dental Equipment Development

(U) RELATED RDT&E:

(U) PE 0603706N (Medical Development)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		(4Q) Review of LEH		(4Q) Complete development of clinical test for spatial disorientation	
Engineering Milestones	(1Q) Sound attenuating material in hearing protectors				
T&E Milestones		(1Q) T&E complete on Farnsworth Lantern			
Contract Milestones		(2Q) Frozen blood washer contract		(1Q) Non-invasive blood analyte	

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0253 Navigation and Electro-optical Support	2,124	7,329	11,577	13,643	4,375	3,051	2,795	2,805	Cont.	Cont.
W0676 Improved ID Developments	17,124	19,081	3,952	2,253	2,281	2,225	2,404	2,479	Cont.	Cont.
W1253 Combat ID System	7,180	7,453	5,368	5,689	67,720	120,248	105,481	73,842	Cont.	Cont.
W2212 All Services Combat ID (ASCID)	0	0	2,889	2,838	2,876	3,531	3,561	3,666	Cont.	Cont.
X0921 NAVSTAR GPS Equipment	49,538	33,257	32,686	37,424	36,048	48,374	3,207	1,792	Cont.	Cont.
TOTAL	75,966	67,120	56,472	61,847	113,300	177,429	117,448	84,584	Cont.	Cont.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Reliable and secure Navigation and positive identification (ID) systems are essential elements of battle management in the naval environment. NAVSTAR Global Positioning System (GPS) is a space-based radio positioning and navigation system that provides users with worldwide, all weather, three dimensional position, velocity and precise time data based on a constellation of 21 or more satellites. In addition to distinguishing friend from foe for weapons employment, the Navy requires secure, jam resistant Identification Friend or Foe (IFF) systems for battle group air defense management and air traffic control. Identification is multifaceted and includes information received from several sensors (both cooperative and non-cooperative systems). The Combat Identification System (CIS) project (W1253) covers the Navy development aspects of a Cooperative Aircraft Identification (CAI) system which is the next generation replacement for the aging MK XII IFF and canceled Air Force MK XV IFF. CAI was directed to perform additional Cost and Operational Effectiveness Analysis (COEA) studies before a Milestone I Defense Acquisition Board (DAB). The All Service Combat Identification (ASCID) project (W2212) covers the Navy portion of a new joint service sponsored test and evaluation program, formerly the OSD sponsored Joint Air Defense Organization-Joint Engagement Zone (JADO-JEZ) program. The program is designed to test cooperative and non-cooperative combat identification systems and tactics, as well as serve as a conduit for evaluating research and development in promising combat identification technologies. The Improved Identification Developments project (W0676) develops Non-Cooperative Target Recognition (NCTR) and integration techniques.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System

The Photonics Mast is a non-hull penetrating replacement for existing optical periscopes. The Photonics Mast exploits a wide portion of the electro-magnetic spectrum utilizing advanced Electro-Optic/thermal imaging and communications reception/Electronic Warfare Support Measures.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0253 Navigation & E-O Support	2,124	7,329	11,577	13,643	4,375	3,051	2,795	2,805	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Photonics Mast will replace existing penetrating periscopes and exploit a wide portion of the electro-magnetic spectrum through advanced E-O/thermal imaging and ESM/Communications reception. It will provide major improvements in submarine stealth and infrared imaging capabilities and make extensive use of image enhancement techniques for target identification and classification. The non-hull penetrating design provides freedom in ship construction as well as space savings for future design submarines. The system will be designed to satisfy Operational Requirement #168-02-88. The Photonics Mast, mounted on the Modular Mast, is planned for installation on the New Attack Submarine, SSN-688 and SEAWOLF class submarines.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($1,074) Issued Photonics Mast Program (PMP) Engineering and Manufacturing Development (EMD) Request for Proposal.
- (U) ($850) Obtained PMP Milestone II approval.
- (U) ($200) Conducted explosive shock, radar cross section and Infra-Red tests.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT TITLE: Navigation & E-O Spt.

2. (U) FY 1995 PLAN:

- (U) ($6,929) Begin PMP EMD phase by awarding Photonics Mast and Modular Mast EMD contracts.
- (U) ($100) Perform Photonics Mast/Modular Mast Program System Requirements Reviews.
- (U) ($100) Perform Photonics Mast/Modular Mast Program System Design Reviews (SDR).
- (U) ($100) Perform Photonics Mast/Modular Mast Program Preliminary Design Reviews (PDR).
- (U) ($100) Perform Photonics Mast Software Specification Review.

3. (U) FY 1996 PLAN:

- (U) ($11,477) Continue PMP EMD Phase.
- (U) ($50) Perform Photonics Mast Critical Design Review (CDR).
- (U) ($50) Perform Modular Mast Program CDR.

4. (U) FY 1997 PLAN:

- (U) ($13,443) Continue PMP EMD Phase.
- (U) ($50) Perform Photonics Mast Test Readiness Review.
- (U) ($50) Perform Photonics Mast Functional Configuration Audit.
- (U) ($100) Perform Photonics Mast/Modular Mast Program Physical Configuration Audit.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: F0253 PROJECT TITLE: Navigation & E-O Spt.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	5,009	7,466	XXX	XXX
(U) FY 1995 Appropriated:	XXX	7,466	XXX	XXX
(U) Adjustments from Appropriated/FY 1995 PRESBUDG:	-2,885	-137	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	2,124	7,329	11,577	13,643

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94 decrease of $2,885K is due to a below threshold reprogramming. The FY 95 decrease of $137K is due to undistributed reductions.

(U) Schedule: Schedule changes reflect award of separate contracts for Photonics and Modular Mast.

(U) Technical: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: F0253 PROJECT TITLE: Navigation & E-O Spt.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN line 083100										
	0	0	0	0	12,000	12,200	12,445	12,656		049,301

(U) RELATED RDT&E:

(U) PE 0603226E (Experimental Evaluation of Innovative Technology)
(U) PE 0604558N (New Design SSN Development)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: F0253 PROJECT TITLE: Navigation & E-O Spt.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	4Q PMP MSII				1Q/00 PMP MSIII PMP IOC
Engineering Milestones		2Q Photonics SDR 4Q Photonics PDR 3Q Modular Mast SDR 4Q Modular Mast PDR	2Q Photonics CDR 2Q Modular Mast CDR		
T&E Milestones	3Q PMP TEMP APPROVAL				1Q/98 PMP DTII 2Q/99 PMP OTIIB
Contract Milestones		2Q Photonics EMD AWARD 3Q Modular Mast EMD AWARD			

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: F0253 PROJECT TITLE: Navigation & E-O Spt.

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Hardware/Computers	150	5,154	5,762	6,138
b. Project Management/Systems Engineering	1,870	1,676	3,674	2,283
c. Integrated Logistics Support	0	0	1,629	3,035
d. Installation and Test	104	499	512	2,187
Total	2,124	7,329	11,577	13,643

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT TITLE: Navigation & E-O Spt.

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Photonics EMD contract											
TBD	C/CPIF	2/95	20,844	20,844	0	0	3,923	7,516	8,116	Cont.	Cont.
Modular Mast EMD contract											
TBD	C/CPIF	9/95	5,200	5,200	0	0	800	1,300	2,300	Cont.	Cont.
NUWC New London CT.	WR	12/94	23,123	23,123	9,640	1,120	1,796	1,747	1,795	Cont.	Cont.
Miscellaneous					3,790	948	810	1,014	768	Cont.	Cont.
Support and Management											
Miscellaneous					15	56	0	0	0	Cont.	Cont.
Test and Evaluation											
Miscellaneous					0	0	0	0	664	Cont.	Cont.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT TITLE: Navigation & E-O Spt.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY: Not Applicable.										
Subtotal Product Development				13,430	2,068	7,329	11,577	12,979	Cont.	Cont.
Subtotal Support and Management				15	56	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation				0	0	0	0	664	Cont.	Cont.
Total Project				13,445	2,124	7,329	11,577	13,643	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JU$TIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0676 Improved ID Developments	17,124	19,081	3,952	2,253	2,281	2,225	2,404	2,479	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This provides for the development and integration of NCTR techniques and multi-sensor information integration systems for improved identification (ID). The current major effort is rapid prototype deployment of the Shipboard Advanced Radar Target Identification System (SARTIS), an NCTR device. A secondary effort involves deployed AUTO-ID prototypes which take IFF track, link data, and kinematics/doctrine information to better ID/display targets; these features/displays are being integrated into a restructured Centralized Identification Friend or Foe (CIFF) development. Project is also developing an upgraded AN/SLQ-20.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($2,600)

- (U) ($14,524) Realigned CIFF to rearrange ship class priorities via contract mod; completed Preliminary Design Review (PDR) and prepared for Critical Design Review (CDR) of the AN/SLQ-20 Upgrade processor.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W0676
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Dev.

2. (U) FY 1995 PLAN:

- (U) ($500)

- (U) ($18,581) Complete CDR and prepare for developmental testing of the CIFF system; complete CDR and prepare for developmental testing of the AN/SLQ-20 Upgrade system.

3. (U) FY 1996 PLAN:

- (U) ($0)

- (U) ($3,952) Perform developmental and operational testing of AN/SLQ-20 Upgrade; pass Milestone III (2Q) and transition to production.

4. (U) FY 1997 PLAN:

- (U) ($100)

- (U) ($2,153) Complete transition to AN/SLQ-20 upgrade production.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W0676
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Dev.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	15,774	19,774	XXX	XXX
(U) FY 1995 Appropriated:	XXX	19,774	XXX	XXX
(U) Adjustments from Appropriated/PRESBUG	+1,350	-693	XXX	XXX
(U) FY 1996/97 NAVCOMPT Budget Submit:	17,124	19,081	3,952	2,253

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 94 increase reflects BTR 94-13 implemented to compensate for prior year reductions. FY 95 decreases various Congressional undistributed reductions.

(U) Schedule: CIFF contract schedule slip 1 month due to FY 95 funds decrease.

(U) Technical: Elimination of 1 CIFF EDM due to FY 95 funds decrease.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 285600 and 285605	0	5,600	10,248	17,644	13,181	10,836	10,703	11,054	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W0676

PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Dev.

(U) RELATED RDT&E:

(U) PE 0603742F, Combat ID Systems.
(U) PE 0603772A, Advanced Tactical Comp. Science Sensors.
(U) PE 0602120A, Electronic Surveillance & Fusing Technologies.
(U) PE 0604817A, Combat Identification.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		2Q SARTIS MS III	2Q SLQ-20 MS III		CONT.
Engineering Milestones	3Q SLQ-20 PDR	1Q SLQ-20 CDR 3Q&4Q CIFF CDRs			
T&E Milestones	1Q SARTIS DT 3Q&4Q SARTIS OT		1Q SLQ-20 DT/OT		CONT. CONT.
Contract Milestones	1Q SLQ-20 E&MD	3Q SARTIS PROD	3Q SLQ-20 PROD		CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Dev

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Hardware Development (E&MD Contracts)	11,699	13,051	600	0
b. Field Activity Support (Gov't/Cntr Eng.)	5,039	5,617	3,142	2,193
c. Program Management Support (HQ Matrix/Cntr & Trv)	386	413	210	60
Total	17,124	19,081	3,952	2,253

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W0676
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Dev.

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Allied Signal Towson, MD	SS/CPFF	6/30/94	28,891	28,891	5,496	5,420	8,007	0	0	9,968	28,891
AIL Systems Deer Park, NY	C/CPFF	3/21/94	TBD	5,162	1,000	2,275	1,487	400	0	0	5,162
Hazeltine Greenlawn, NY	C/CPIF	2/25/94	9,740	9,740	1,850	2,500	3,890	1,000	500	0	9,740
NCCOSC	CIFF/SARTIS/SLQ-20				3,637	2,005	2,720	385	50	Cont.	Cont.
NISE EAST	CIFF/SARTIS				17,858	3,344	1,354	580	300	Cont.	Cont.
Miscellaneous	Various	Various			17,956	1,144	1,185	1,177	1,293	Cont.	Cont.
Support and Management											
Miscellaneous	Various	Various			1,160	386	413	210	60	Cont.	Cont.
Test and Evaluation											
Miscellaneous	Various	Various			545	50	25	200	50	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Dev.

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	47,797	16,688	18,643	3,542	2,143	Cont.	Cont.
Subtotal Support and Management	1,160	386	413	210	60	Cont.	Cont.
Subtotal Test and Evaluation	545	50	25	200	50	Cont.	Cont.
Total Project	49,502*	17,124	19,081	3,952	2,253	Cont.	Cont.

*Note: Reflects past record estimates FY 90-FY 93

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W1253 Combat ID System	7,180	7,453	5,368	5,689	67,720	120,248	105,481	73,842	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: USN has the requirement for a Cooperative Aircraft Idntification (CAI) system that would replace aging Identification, Friend or Foe equipments. The Joint Chiefs of Staff/Joint Requirements Oversight Council Mission Needs Statement (JCS/JROC MNS) for Combat Identification was validated 4/92. OSD had a Milestone/Defense Acquisition Board (DAB) 0 in Aug 92 which directed "Combat ID to enter into Phase 0 for Joint Concept Exploration and Definition studies on Battlefield ID (Army lead) and CAI (Navy) with Navy as overall lead for coordination of both Phase 0 efforts." A Cost and Operational Effectiveness Analysis (COEA) is underway to investigate options to be presented at DAB I. The Naval Research Lab (NRL) is directing COEA studies.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($7,180) Supported COEA study and prepared DOD I 5000 series Documentation for DAB I.

2. (U) FY 1995 PLAN:

- (U) ($3,453) Continue COEA study. Support OSD led Combat ID Task Force. Continue Allied interoperability discussions. Commence planning for risk reduction studies.

- (U) ($4,000) Fund Joint Combat ID Office (OPNAV-662) led ASCIET Program ($1,000). Fund OSD led Combat ID Task Force ($1,000). Fund OSD led Combat ID Task Force directed Advanced Concept Technology Demonstration (ACTD) Systems/Test designs ($2,000).

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W1253
PROJECT TITLE: Combat ID System

3. (U) FY 1996 PLAN:

- (U) ($5,368) Continue Risk reduction phase/support ACTD studies.

4. (U) FY 1997 PLAN:

- (U) ($5,689) Continue Risk reduction phase/support ACTD studies.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	7,180	8,172	XXX	XXX
(U) FY 1995 Appropriated:	XXX	8,172	XXX	XXX
(U) Adjustments from Appropriated/PRESBUDG:	0	-719	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	7,180	7,453	5,368	5,689

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decreases in FY 95 reflect various Congressional undistributed reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W1253
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Combat ID System

(U) RELATED RDT&E:

(U) PE 0603772A (Advance Tactical Comp. Science Sensors)
(U) PE 0602120A (Electronic Surveillance & Fusing Technologies)
(U) PE 0603742F (Combat ID Systems)
(U) PE 0604817A (Combat Identification)

D. (U) SCHEDULE PROFILE: TBD

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					Cont.
Engineering Milestones					Cont.
T&E Milestones					Cont.
Contract Milestones					Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT NUMBER: W1253 PROJECT TITLE: Combat ID System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Primary Ancillary Hardware	0	2,340	0	0
b. Support Equip. Acquisition	0	0	0	0
c. Misc Development Support	1,637	432	690	600
d. Test and Evaluation	1,005	0	0	0
e. Engineering Support	3,630	3,709	4,023	4,404
f. Program Management Support	908	972	655	685
Total	7,180	7,453	5,368	5,689

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W1253
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Combat ID System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Contracts	Various	Various			2,574	1,095	0	0	0	Cont.	Cont.
NRL	WX	Various			3,560	1,602	2,000	1,000	1,000	Cont.	Cont.
Miscellaneous	Various	Various			11,401	2,570	4,481	3,713	4,004	Cont.	Cont.
Support and Management											
Miscellaneous	Various	Various			775	908	972	655	685	Cont.	Cont.
Test and Evaluation											
NAWCADPAX	WX	Various			2,157	890	0	0	0	Cont.	Cont.
Miscellaneous					2,500	115	0	0	0	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W1253
PROJECT TITLE: Combat ID System

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	17,535	5,267	6,481	4,713	5,004	Cont.	Cont.
Subtotal Support and Management	775	908	972	655	685	Cont.	Cont.
Subtotal Test and Evaluation	4,657	1,005	0	0	0	Cont.	Cont.
Total Project	22,967	7,180	7,453	5,368	5,689	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2212 All Services Combat ID Evaluation Team (ASCIET)	0	0	2,889	2,838	2,876	3,531	3,561	3,666	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: W2212 ALL SERVICES COMBAT IDENTIFICATION EVALUATION TEAM (ASCIET) PROGRAM. Formerly, the Office of the Secretary of Defense (OSD) sponsored Joint Air Defense Organization-Joint Engagement Zone (JADO-JEZ) testing. This is a new, joint services test program whose operations have been proportionally assumed by the four Services under oversight of the General Officer Steering Committee for Combat Identification (GOSC-CI) and the Joint Combat Identification Office (JCIDO). The program is designed to conduct periodic, joint exercises to evaluate and assess cooperative and non-cooperative, direct and indirect, passive and active combat identification systems, platforms, and tactics, as well as serving as the primary test bed for evaluating research and development in promising combat identification technologies in a joint, tactical environment. This is a fiscal year 1996 DON new start.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1995 PLAN: Not applicable.

3. (U) FY 1996 PLAN:

- (U) ($2,889) Conduct test and evaluation of combat identification platforms and systems in the air-to-ground and ground-to-ground mission areas.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: W2212 PROJECT TITLE: All Services Combat ID Evaluation Team (ASCIET)

4. (U) FY 1997 PLAN:

• (U) ($3,275) Conduct test and evaluation of combat identification platforms and systems in the air-to-air and ground-to-air mission areas.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	XXX	XXX	XXX	XXX
(U) FY 1995 Appropriated:	XXX	XXX	XXX	XXX
(U) Adjustments from Appropriated/PRESBUDG:	XXX	XXX	XXX	XXX
(U) FY 1996/97 PRESBUDG Submit:	XXX	XXX	2,889	2,838

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Reflects funding for new start to cover exercise platforms and assets, personnel and accomodations, equipment and recorders, data processing and evaluations, reporting and briefings during Joint Services exercises. Decreases resulted from Navy offsets to balance the budget and inflation reductions.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Team

(ASCIET)

(U) RELATED RDT&E: Not applicable.

(U) SCHEDULE PROFILE: Not applicable.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W2212
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: All Services Combat ID

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Program Management Support			183	215
b. Fleet Test and Evaluation			2,270	2,199
c. Miscellaneous			436	424
Total	0	0	2,889	2,838

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W2212
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: All Services Combat ID Evaluation Team (ASCIET)

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development					0	0	0	0	0	Cont.	Cont.
Support and Management		TBD	TBD	TBD	0	0	0	619	639	Cont.	Cont.
Test and Evaluation		TBD	TBD	TBD	0	0	0	2,270	2,199	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1995

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Team (ASCIET)

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	0	0	Cont.	Cont.
Subtotal Support and Management	0	0	0	619	639	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	2,270	2,199	Cont.	Cont.
Total Project	0	0	0	2,889	2,838	Cont.	Cont.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0921	49,538	33,257	32,686	37,424	36,048	48,374	3,207	1,792	cont.	cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The NAVSTAR Global Positioning System (GPS) is a space-based radio positioning and navigation system that provides users with worldwide, all-weather, three-dimensional position, velocity and precise time data based on a constellation of 24 satellites. Navy's portion of the GPS program develops User Equipment (UE) and provides new/increased capability to each type platform through the integration and testing of this equipment. GPS increases the "performance envelope" of each testing of this aircraft by enhancing the aircraft's mission capability. GPS integrations involve development of ancillary hardware and software and testing of prototype avionics suites to validate enhancement of mission systems, emulation of Tactical Air Navigation (TACAN) in aircraft and system performance characteristics suitable for operational testing.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($39,973) Continued integration engineering on AH-1W, AV-8(day attack), AV-8(Radar), T-44, S-3B, E-2C(UD), E-6B, ES-3A, SH-60B(UD), A-6E, UH-3H, T-45, F-14D, C-2A, F/A-18, CH-46, MH-53E, UH-1N, VH-3D, and H/KC-130 aircraft.
- (U) ($75) Continued systems integration in the Electrostatically Supported Gyro Navigator (ESGN).
- (U) ($115) Completed development of TAMPS software.
- (U) ($251) Continued integration with shipboard command control systems.

- (U) ($2,503) Continued effort in the areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment (UE) design analysis.
- (U) ($4,515) Completed design and testing of GPS Inertial Navigation Assembly (GINA).
- (U) ($2,106) Continued NAVSSI software and integration engineering with shipboard command and control.

2. (U) FY 1995 PLAN:

- (U) ($24,496) Continue integration engineering on C-9B, UH-12M, TH-57, E-2C(UD), T-44B, AV-8B(day attack), E-2C, F/A-18A, F/A-18B, AH-1W, CH-53E, H/KC-130, RP-3A, T-2C, T-39D, AV-8B(radar), EA-6B, EA-3A, UH-3H, E-6A, C-2A, EP-3A, EP-3E, EP-3J, P-3B, P-3C, RP-3D, TP-3B, TP-3C, UP-3A, UP-3B, VP-3B, VP-3A, DC-9, RC-12M, RC-12U, VC-20, UC-12U, F-14A, F-14B, F/A-18C, F/A-18D, V-22A, T-45A, CH-53D, MH-53E, SH-60B and S-3B aircraft.
- (U) ($50) Complete systems integration in the ESGN.
- (U) ($5,455) Continue NAVSSI integration engineering with shipboard command and control.
- (U) ($3,256) Continue effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.

3. (U) FY 1996 PLAN:

- (U) ($25,850) Continue integration engineering on E-2C, CH-53D/E, P-3C, VP-3A, TP-3, VC-4, VC-11, C-9B, DC-9, RC-12M, VC-12M, F-14A/B, F-14D, HH-1N, V-22A, S-3B, US-3A, F-5, T-38, F/A-18A, F/A-18B, F/A-18E, F/A-18F, AH-1W, C-20D, C-20G, T-2C, CT-29, T-44A, TH-57B, UH-3H, EP-3A, EP-3B, EP-3J, P-3B, RP-3A, RP-3E, TP-3A, TP-3B, UP-B, EA-6B, E-6A, AV-8B, RC-12U, VC-20, T-44B aircraft.
- (U) ($4,560) Continue NAVSSI integration engineering with shipboard command and control.
- (U) ($2,276) Continue effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: X0921 PROJECT TITLE: NAVSTAR GPS

4. (U) FY 1997 PLAN:

- (U) ($29,647) Continue integration engineering on RP-3UD, RC-12M, UC-12M, F-14A/B, HH-1N, VH-3D, VH-60, S-3B, US-3A, EA-6B, T-45, F/A-18A, F-5, T-38, EA-6B, AH-1W, EP-3A, EP-3B, EP-3J, P-3B, RP-3A, RP-3D, TP-3A, UP-3A, UP-B, VP-3A, VC-4, VC-11, RC-12U, UC-12U, C-20D, C-20G, V-22A, CT-29, T-39A, T-33A, T-44B, CH-53D, RH-53D, TH-57B, TH-57C aircraft.
- (U) ($4,027) Continue efforts in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.
- (U) ($3,750) Continue NAVSSI integration engineering with shipboard command and control.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	49,084	33,801		
(U) FY 1995 Appropriated		33,801		
(U) Adjustments from Appropriated/FY95 PRESBUDG:	+454	-544		
(U) FY 1996/97 President's Budget Submit:	49,538	33,257	32,686	37,424

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Additional FY 94 funding of $454 is to identify and investigate means of enhancing GPS system integrity as directed by CNO in RAPDD #330-633C. FY-95 was decreased by $544K, 322K for small business innovative research and $222K to reflect indistributed reductions for travel, consulting sevices and unversity research.

(U) Schedule: All aircraft integrations have been scheduled within the FYDP to meet Congressional requirement to have GPS on all aircraft by the year 2000.

(U) Technical: None.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT NUMBER: X0921 PROJECT TITLE: NAVSTAR GPS

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line #26570	4,847	15,495	1,487	5,044	5,579	5,211	5,158	5,312	cont.	cont.
(U) APN BA5	29,987	39,346	38,507	53,819	68,145	74,999	14,908	9,814	cont.	cont.

(U) RELATED RDT&E: None

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones	NAVSSI/MSIIIA 3rd Qtr 94 UE MSIIIA 3rd Qtr 94	EMBEDDED/MSIIIA 3RD Qtr 95 UE MS III 2nd Qtr 95 NAVSSI/MSIIIB 3RD Qtr 95			
Engineering Milestones					
T&E Milestones	EMBEDDED DT 3/94 EMBEDDED OT 8/94				
Contract Milestones					

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: NAVSTAR GPS

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Project Management	1,977	3,154	2,934	2,297
b. Systems Engineering	10,074	5,874	3,976	5,903
c. Software Development	4,274	4,225	2,580	3,242
d. Hardware Development	28,794	17,333	16,884	18,014
e. System Test & Evaluation	4,091	2,371	6,012	7,764
f. Integrated Logistics Support	328	300	300	204
Total	49,538	33,257	32,686	37,424

UNCLASSIFIED

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: NAVSTAR GPS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
Major Contracts											
F-14A/B	TBD	5/96	9,500	9,500				3,000			
Integration	w/options								4,000		
TBD										2,500	9,500
F-18A/B	SS	5/95	5,500	5,500			1,500				
Integration	w/options							2,500			
McDonnell Douglas									1,000		
St. Louis, MO										500	5,500
V-22 Integration	TBD	5/96	7,000	7,000				3,000			
TBD	w/options								1,500		
										2,500	7,000
E-6A (Software)	SS	3/93	3,775	3,775	1,475						
Smith	w/options					2,300					3,775
London, England											
E-6A (Hardware)	SS	3/93	8,050	8,050	5,750						
Boeing	w/options					1,800					
London, England							500				8,050

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT TITLE: NAVSTAR GPS

B.(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development (cont)											
T-45	SS	3/93	4,500	4,500	2,000						
McDonnell Douglass						2,500					4,500
St. Louis, MO											
F-14D	SS	7/93	13,422	13,422	7,299						
						6,123					13,422
S-3B	SS	7/93	8,621	8,621	2,999						
Lockheed Aeronautical	w/options					3,175					
Marietta, GA							2,447				8,621
GINA	CP	5/93	7,015	7,015	2,500						
Litton						4,515					7,015
Embedded GPS/INS	MIPR	4/94	2,200	2,200		2,200					2,200
Honeywell, Inc											
Minneapolis, MN											
Engineering	C/CPAF	12/93	10,694	10,694	5,965	1,116					
SSA, Arlington,VA		TBD					1,800				
TBD	CP	TBD						1,063			
									750		10,694

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: NAVSTAR GPS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development (cont)											
All Other Contracts (Aggregate Total)					158,138		5,082	3,200	4,226	10,950	181,596
Subtotal Contracts					186,126	23,729	11,329	12,763	11,476	16,450	261,873
In-House NRAD, Det Warminster, PA	WX	12/93				6,928	7,090	9,582	10,776		34,376
NAWC Indianoplis, IN	WX	12/93				2,346	2,878	2,161	2,471		9,856
NAWC China Lake, CA		12/93				1,000					1,000

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT NUMBER: X0921 PROJECT TITLE: NAVSTAR GPS

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development (cont)											
All Other less than $1M	WX				376,606	10,962	9,181	1,731	4,487	53,329	456,296
Subtotal In-House					376,606	21,236	19,149	13,474	17,734	53,329	501,528
Support and Management											
All Other Contracts (Aggregate Total)					12,228	482	408	437	450	1,763	15,768
Test and Evaluation All Other Field/Lab Activities (Aggregate Total)					11,080	4,091	2,371	6,012	7,764	17,879	49,197

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: NAVSTAR GPS

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	562,732	44,965	30,478	26,237	29,210	69,779	763,401
Subtotal Support and Management	12,228	482	408	437	450	1,763	15,768
Subtotal Test and Evaluation	11,080	4,091	2,371	6,012	7,764	17,879	49,197
Total Project	586,040	49,538	33,257	32,686	37,424	89,421	828,366

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE:Distributed Surveillance System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMP	TOTAL PROGRAM
Fixed Distributed System X1312	103,660	85,338	63,525	2,069	3,702	3,667	2,687	2,687	18,117	1,244,352
Advanced Deployable System X1300	20,095	21,592	29,982	38,441	37,490	40,671	43,054	44,334	CONT.	CONT.
TOTAL	123,755	106,930	93,507	40,510	41,192	44,338	45,741	47,021	18,117	1,244,352

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Distributed Systems is part of the Integrated Undersea Surveillance System (IUSS). IUSS provides the majority of the U.S. Navy's open ocean detection capability against quiet submarines, including rest of world diesels. The Distributed Systems program element (PE) 0604784N consists of two projects, X1312 Fixed Distributed System (FDS) and X1300 Advanced Deployable Systems (ADS), designed to improve the effectiveness and flexibility of Undersea Surveillance.

(U) The Advanced Deployable System (ADS) funds provide for the concept study, development and installation of ADS. ADS will provide a rapidly (7 to 10 days) and covertly deployable undersea surveillance capability to operational forces involved in Regional Conflicts. ADS will provide timely response to tactical requirements and uses proven technology to detect very quiet submarines in the most difficult shallow water environments with very high target position accuracy. The system will include sensors, processing and an interface to the Surveillance Direction System (SDS) for reporting of submarine and mining activity to Joint Task Force Commanders (JTFC) and tactical assets. The program uses and expands on technology developed under the Fixed Distributed System (FDS) program, the Advanced Deployable Array (AdDA) Program, the Port Area Surveillance (PAS) Program, Sonobuoy and Office of Naval Research (ONR) programs and the ARIADNE Program.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because FDS project X1312 encompasses engineering and manufacturing development of new end item prior to production approval. FDS passed MS II in FY 89. MS III has been deleted. Concept study funds for ADS were broken out in FY 92 and NAVCOMPT established project X1300 in FY 93 for ADS. ADS entered the demonstration and validation phase in 1ST QTR FY95.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMP	TOTAL PROGRAM
Advanced Deployable System X1300	20,095	21,592	29,982	38,441	37,490	40,671	43,054	44,334	CONT.	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Distributed systems are part of the Integrated Undersea Surveillance System (IUSS). IUSS provides the majority of the US Navy's open ocean detection capability against quiet submarines, including third world diesels. These submarines pose a significant threat to US forces as documented in the Mission Needs Statement for Undersea Surveillance in Littoral Waters dated 3 Mar 93.

(U) ADS will be a deployable undersea surveillance system composed of distributed fields of sensors that can be rapidly and unobtrusively deployed in shallow water against enemy submarines during regional contingencies. It will be deployed prior to or during regional conflicts. ADS will build on the FDS-D test experience with distributed fields in shallow noisy water and use collected data for processing verification. It will use FDS developed processing technologies and will also incorporate advanced sensors and technology from other related programs. ADS is a system designed to detect and track modern diesel electric submarines, and it should provide capability for tracking surface ships and detecting mine laying activity as well.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U) FY 1994 ACCOMPLISHMENTS:

- (U) ($7,647) Completed concept studies of the ADS.
- (U) ($541) Conducted an independent Cost and Operational Effectiveness Analysis (COEA) study.
- (U) ($4,574) Developed documentation to support Milestone I decision.
- (U) ($1,000) Post Milestone I, began prototyping.

- (U) ($6,333) Executed sea test(s) and analyzed test data from sensors appropriate to demonstrate ADS concept. Incorporated results into prototype developments.

2. (U) FY 1995 PLAN:

- (U) ($10,350) Design prototype system, perform subsystem development and validation, and integrate three node system for risk management. The ADS prototype will be configured to meet the Operational Requirements Document (ORD)thresholds. Tests will also be conducted to reduce risks of more rapid/more unobserved deployment capability indicated by the ORD goals.
- (U) ($1,784) Execute sea test(s) and analyze test data from data collection sensors similar to ADS. Incorporate results into prototype developments.
- (U) ($2,500) Design and begin prototype development of the All Optical Deployable System (AODS).
- (U) ($3,616) Support contractor design effort through continued system engineering and testing support.
- (U) ($3,342) Manage ADS program development and monitor contractor efforts.

3. (U) FY 1996 PLAN:

- (U) ($19,429) Provide three node system for testing, order long lead parts for multinode tests and continue design, development and integration of prototype.
- (U) ($1,916) Plan and execute sea test of three node network provided by contractor.
- (U) ($1,900) Continue to design, develop, and assemble prototype AODS.
- (U) ($3,427) Support contractor design effort through continued system engineering and testing support.
- (U) ($3,310) Manage ADS program development and monitor contractor efforts.

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance PROJECT TITLE: Advanced Deployable System

4. (U) FY 1997 PLAN:
- (U) ($25,850) Complete ordering of parts, assemble nodes for multinode test and complete integration of system.
- (U) ($2,138) Analyze data collected at sea and plan multinode test(s) leading to Fleet Demonstration.
- (U) ($3,500) Continue to develop and test prototype AODS to demonstrate system performance.
- (U) ($3,032) Support the prime contractor design effort through continued system engineering and testing support.
- (U) ($3,921) Manage ADS program development and monitor contractor efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	22,888	32,440		
(U) FY 1995 Appropriated:		32,440		
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	-2,793	-10,848		
(U) FY 1996/97 Budget Submit:	20,095	21,592	29,982	38,441

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 decreased by $121k end of year execution update and $2,672k reprograming to FDS. FY95 was decreased by $513K to accomodate Small Busines Innovative Research, and decreased by $1,047K to reflect undistributed reductions for travel, consulting services, federally funded research centers, and university research. $8,928K reprogrammed to FDS.

(U) Schedule: A delay in reaching Milestone I and subsequent delay in award of DEM/VAL contract freed up funds in FY 94 and FY 95.

(U) Technical: Not Applicable

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROGRAM ELEMENT TITLE:Distributed Surveillance System PROJECT NUMBER: X1300 PROJECT TITLE:Advanced Deployable System

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) Not Applicable.

FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMP	TOTAL PROGRAM

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		MSI 1st Qtr			CONT: MSII 4th Qtr FY98
Engineering Milestones		SRR 3rd Qtr			SDR FY1998
T&E Milestones					Fleet Demo Test FY1998
Contract Milestones		Dem/Val Contract Award 2nd Qtr			E&MD Phase EDM Contract Award FY99

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Prime Mission Product	2,276	12,850	21,329	29,350
b. System Test & Evaluation	6,333	1,784	1,916	2,138
c. System Engineering & Program Mgmt	10,667	6,958	6,737	6,703
d. Operational/Site Activation	819	0	0	250
Total	20,095	21,592	29,982	38,441

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
ADS Prototype (Dem/Val)	C/CPAF	3/95 option	TBD*	71,865	0	0	9,900	18,429	24,700	CONT.	CONT.
OTHER CONTRACTS			TBD*		800	1,702	0	0	250	CONT.	CONT.
LORAL (SSIPS) Manassas,VA	SS/CP	3/95 option	TBD	10,920	0	0	300	800	1,525	CONT.	CONT.
NRL AODS Washington,D.C.	WR	10/93 10/93 10/94 10/95 10/96	TBD*	11,500	0	1,000	2,250	1,750	3,500	CONT.	CONT.

*Pre Milestone I - contract award and baseline
post milestone I

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
NCCOSC	WR	10/92	15,494	15,494	4,042						
		10/93				2,809					
		10/94					1,888				
		10/95						1,625			
		10/96							940	CONT.	CONT.
OTHER ACTIVITIES Support and Management					686	595	862	1,607	698	CONT.	CONT.
TRW Arlington, VA	C/CPAF	10/92 option	5,139	5,139	1,253	2,462	747				
TBD	C/CP	10/95 option	TBD	5,110				596	885	CONT.	CONT.
APL/JHU Laurel, MD	SS/CPFF	10/92 option	3,080	3,080	175	1,200	0	0	0	CONT.	CONT.
Other Contracts				11,310	1,047	1,910	1,314	1,340	1,472	CONT.	CONT.
NCCOSC	WR	10/93	8,505	8,505							
		10/93				1,455					
		10/94					450				
		10/95						500			
		10/96							500	CONT.	CONT.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Other Activities				6,589	17	166	1,528	800	1,603	CONT	CONT
Test and Evaluation											
ARL/UT Austin, TX	SS/CPFF	4/93 option	8,950	8,950	2,000	1,750	1,025	1,510	700	CONT.	CONT.
Other Contracts				3,440	105	291	450	300	483	CONT.	CONT.
NCCOSC San Diego, CA	WR	10/92 10/93 10/94 10/95 10/96	23,706	23,706	2,444	3,387	400	300	1,110	CONT.	CONT.
Other Activities				4,017	700	1,368	478	425	75	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY Not applicable.

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Subtotal Product Development	5,528	6,107	15,200	24,211	31,613	CONT.	CONT.
Subtotal Support and Management	2,492	7,192	4,039	3,236	4,460	CONT.	CONT.
Subtotal Test and Evaluation	5,249	6,796	2,353	2,535	2,368	CONT.	CONT.
Total Project	13,269	20,095	21,592	29,982	38,441	CONT.	CONT.

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BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System

(U) COST (Dollars in thousands)

PROJECT NUMBER& TITLE	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMP	TOTAL PROGRAM
X1312 Fixed Distributed System	103,660	85,338	63,525	2,069	3,702	3,667	2,687	2,687	18,117	1,244,352

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Fixed Distributed System (FDS) is part of the Integrated Undersea Surveillance System (IUSS). IUSS provides the majority of the U.S. Navy's open ocean detection capability against quiet submarines, including rest of world diesels. FDS is a passive acoustic surveillance system for detecting these quieter submarines using hydrophones FDS will vital to their mission success as well as long term strategic indications and warning for fleet and national command authorities. FDS technology is the only hardware available for new bottom mounted undersea surveillance systems. FDS is modular and can be used

FDS can be rapidly deployed in support of regional conflicts or permanently installed in areas requiring long term coverage (estimated 24 year life). Increasing emphasis is being placed on the deployable, relocatable mission which would allow the U.S. the capability to set up, on short notice, surveillance coverage in regional conflict scenarios. Because of this emphasis, the Navy developed a rapidly deployable demonstration of the FDS hardware, FDS-Deployable (FDS-D), that proved the capability to respond to regional conflict scenarios in a short time period. The FDS underwater system builds on commercial fiber-optic technology to achieve high data capacities, long trunk cable lengths and extremely high reliability. FDS components are designed to be low power, small in diameter and flexible, allowing deployment of systems from non-traditional or covert platforms. Signal and information processing is accomplished ashore or in deployable vans. Signal processing uses adaptive beam forming, spectrum analysis, broadband correlation and full spectrum. Processing can accommodate distributed clusters or large arrays. Shore processing is workstation based using Non-Development Item (NDI) hardware throughout. This FDS processing system forms the framework and architecture for all IUSS processing requirements to be procured in the future.

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FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1994 ACCOMPLISHMENTS:

- (U) ($42,675) Continued manufacturing and assembly of underwater components.
- (U) ($26,321) Continued integration efforts of underwater components into final configuration items.
- (U) ($13,220) Completed preparation for and conducted FDS-D demonstration (DT-IID)
- (U) ($4,414)
- (U) ($17,030) Completed integration of shore processing system

2. (U) FY 1995 PLAN:

- (U) ($26,306) Continue underwater component manufacture and assembly for FDS.
- (U) ($5,018)
- (U) ($35,685) Complete shore processing system Build 4 development and conduct shore processing system Factory Acceptance Test (FAT).
- (U) ($13,847) Install shore processing system at site. Conduct Site Acceptance Test (DT-IIE).
- (U) ($0)
- (U) ($4,482)

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1312
PROGRAM ELEMENT TITLE:Distributed Surveillance System PROJECT TITLE:Fixed Distributed System

3. (U) FY 1996 PLAN:

- (U) ($32,854) Complete underwater component integration for FDS-1
- (U) ($21,116)
- (U) ($4,962) Complete shore processing system Build 5, development, testing and installation.
- (U) ($4,593) Conduct TECHEVAL.

4. (U) FY 1997 PLAN:

- (U) ($2,000) Begin Pre-planned Product Improvements (P3I)
- (U) ($69) Begin FOT&E

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1994	FY 1995	FY 1996	FY 1997
(U) FY 1995 President's Budget:	100,878	81,866		
(U) FY 1995 Appropriated:		81,866		
(U) Adjustments from Appropriated/ FY 1995 PRESBUDG:	2,782	3,472		
(U) FY 1996/97 PRESBUDG Submit:	103,660	85,338	63,525	2,069

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY94 ($2,672K) and FY95 ($8,928K) plus up is due to a funds shift from the Advanced Deployable System (X1300). In addition FY94 reflects an End-of-Year execution update increase of $110K. FY 95 reductions reflect $1,323K to accomodate Small Business Innovative Research, $1,400K due to cancellation of OPEVAL and $2,733K to reflect FDS share of congressionally mandated reductions for travel, consulting services, Federally Funded Research Centers and University Research.

(U) Schedule: FY 96/97 Dept of Navy adjustment due to cancellation of OPEVAL.

(U) Technical: Not applicable.

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

	FY 1994 ACTUAL	FY 1995 ESTIMATE	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMP CONT.	TOTAL PROGRAM CONT.
O&MN AGSG 5C3C/1C3C	86,402	37,188	36,411	32,957	29,847	30,776	31,916	31,459		

FY 1996 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

(U) RELATED RDT&E:

(U) PE 0204311N(Integrated Surveillance System)

D. (U) SCHEDULE PROFILE:

	FY 1994	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones					
Engineering Milestones	3 Qtr Install* FDS-D	3 Qtr Deploy field one	3 Qtr TECHEVAL 2 Qtr Deploy Field II		
T&E Milestones	2 Qtr DT-IID 3Q FDS-D Demo	3 Qtr Shore Segment Factory Acceptance Test 4 Qtr DT-II E			
Contract Milestones					

FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

A. (U) PROJECT COST BREAKDOWN: ($ in thousands)

Project Cost Categories	FY 1994	FY 1995	FY 1996	FY 1997
a. Underwater Segment	63,057	36,438	35,943	0
b. Shore Processing Segment	19,999	31,985	15,525	1,246
c. Peculiar Support Equip	331	0	0	0
d. System Test & Eval	3,598	7,054	6,286	0
e. Program Eng & Mgmt	10,318	7,117	3,699	823
f. Unassigned Requirements	47	0	0	0
g. Shore Site Activation	0	307	312	0
h. Sea Site Activation	6,162	2,277	1,600	0
i. Common Support Equip	148	160	160	0
Total	103,660	85,338	63,525	2,069

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Product Development											
AT&T Greensboro, N.C.	SS/CPIF	2/93 option	517,653	517,653	373,183	48,297	45,420	50,753	0	0	517,653
STC Portland, OR	COMP CPIF/FPI	9/89 5/94 option	20,689	20,689	13,830	1,840	5,019	0	0	0	20,689
SIMPLEX Portsmouth, N.H.	COMP CPIF/FPI	9/89 1/94 option	21,764	21,764	10,374	10,286	1,104	0	0	0	21,764
LORAL Manassas,VA	COMP CPIF	10/91 10/93 option	113,898	113,898	83,898	10,754	15,000	3,000	1,246	0	113,898
NCCOSC San Diego,CA	WX	10/93 10/94 10/95	34,523	34,523	29,471	4,007	1,045	0	0	0	34,523

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FY 1996 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:February 1995

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER: X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1993 & Prior	FY 1994 Budget	FY 1995 Budget	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
NFESC	WX	10/93	17,277	17,277	15,673	1,604	0	0	0	0 0	17,277
Port Hueneme, CA											
NISE-East	WX	10/93	3,757	3,757	1,527	1,061					
St.Inigoes,MD		10/94					669				
		10/95						500	0	0	3,757
CACI	COMP		3,670	3,670	0						
Arlington, VA	CPAF	5/94				2,470					
		option					600				
								600	0	0	3,670
VARIOUS			287,104	2871049	267,360	6,570	0	184	0	12,990	287,104
Support and Management											
ARL/UT	SS/CPFF	10/93	9,771	9,771	7,524	1,997					
		option					250	0	0	0	9,771
TRW	COMP/CPAF		107,908	107,908	95,420	5,675					
							5,183				
								1,630	0	0	107,908
VARIOUS			86,877	86,877	70,717	5,501	3,994	715	823	5,127	86,877
Test and Evaluation											
COMOPTEVFOR	WR	10/93	3,494	3,494	713	656					
Norfolk,VA		10/94					575				
		10/95						1,550	0	0	3,494
NCCOSC	WX	10/94	15,094	15,094	1,953	2,069					
							6,479				
								4,593	0	0	15,094
VARIOUS			873	873	0	873	0	0	0	0	873

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